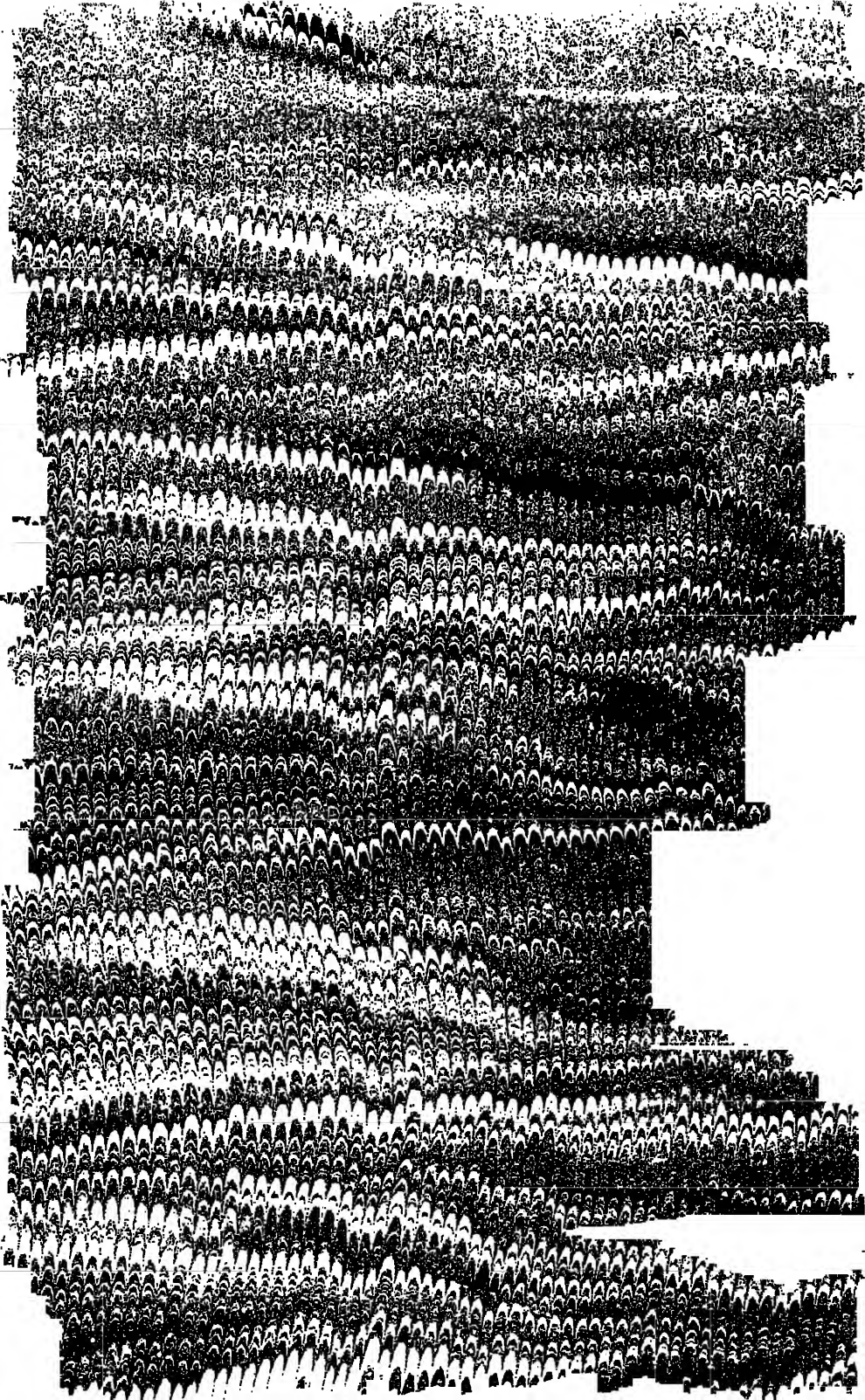


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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

EDITED BY

THE HONORARY SECRETARIES,

24999

JANUARY TO DECEMBER,

1878.

891.05
P.A.S.B.



A 375

CALCUTTA:

PRINTED BY G. H. ROUSE, BAPTIST MISSION PRESS,

AND PUBLISHED AT THE

ASIATIC SOCIETY'S ROOMS, 57, PARK STREET.

1878.

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ERRATA.



- Page 41, 4th line from bottom, *dele* Refund of
Page 42, 10th line from bottom, *dele* Refund of
Page 46, 14th line from bottom, *for s read is*
Page 47, 21st line from top, *for in course read in the course.*
Page 51, 12th line from bottom, *for publications read publication.*
Page 57, 5th line from bottom, *for remaining read remainder.*
Page 57, 5th line from bottom, *for 5 read 5½.*
Page 56, 7th line from top, *for La Touch read La Touche*
Page 151, 2nd line from bottom, *for De Sacy read De Lacy*
Plate III should be Plate II.

[APPENDIX.]

ABSTRACT STATEMENT
OF
RECEIPTS AND DISBURSEMENTS
OF THE
ASIATIC SOCIETY OF BENGAL
FOR
THE YEAR 1877.

STATEMENT, *Abstract of the Cash Account*

		RECEIPTS.		1877.	1876.
BALANCE OF 1876.					
In the Bank of Bengal, viz.					
Account of Stoliczka Memorial Fund, ..	Rs. 334 10 5				
Account of Dr. Oldham Memorial Fund, ..	130 8 0				
Account of Piddington Pension Fund, ..	70 11 2				
Account of Asiatic Society of Bengal, ..	3,213 13 2				
		3,749 10 9			
Cash in hand, ..	218 6 3				
			3,968 1 0	4,018 11 7	
ADMISSION FEES.					
Received from Members, ..	880 0 0				
			880 0 0	800 0 0	
SUBSCRIPTIONS.					
Received from Members, ..	7,200 2 0				
			7,200 2 0	9,009 1 9	
COMMUTED SUBSCRIPTIONS.					
Received from Members, ..	770 0 0				
			770 0 0		
PUBLICATIONS.					
Sale proceeds of Journal and Proceedings, ..	832 7 0				
Subscription to ditto, ..	776 11 0				
Refund of Postage Stamps, ..	24 3 0				
			1,633 5 0	1,535 8 0	
LIBRARY.					
Sale proceeds of Books, ..	222 8 0				
Refund of Postage Stamps, ..	4 13 0				
			227 5 0	312 9 6	
FINES AND COMMISSIONS.					
Fines, &c., ..	40 13 0				
Commission on purchase of Stamps, ..	6 10 9				
			47 7 9	45 7 3	
CONTINGENT CHARGES.					
Sale proceeds of waste papers, ..	6 8 0				
Ditto ditto of old Zinc Sheeting, ..	15 0 0				
			21 8 0	15 1 0	
VESTED FUND.					
Sale proceeds of $5\frac{1}{2}$ per cent. Government Securities, ..		17,000 0 0			
Interest on ditto ditto, ..	265 0 11				
Premium on ditto ditto, ..	236 0 0				
			17,501 0 11	1,63,675 14 8	
Carried over, Rs. 32,248 13 8			1,79,412 5 9		

No. 1.

of the Asiatic Society for 1877.

DISBURSEMENTS.		1877.	1876.
PUBLICATIONS.			
Paid Freight for sending Journal and Proceedings to England, ..	156 15 0		
Ditto Lithographing and Engraving ..	1,316 14 6		
Ditto .. charges, ..	5,521 15 7		
Ditto .. on Collecting Bills, ..	1 14 6		
Ditto Purchase of Postage Stamps, ..	284 15 6		
Ditto Packing charges, ..	28 5 0		
Ditto Paper for Plates, ..	103 13 3		
Ditto overland carriage on parcels of Lithographed Plates, from England, ..	41 4 0		
Ditto J. Smidt, Esq. for drawing, printing and colouring 750 copies of plate (<i>Garrulax Michales</i>), ..	158 0 9		
Ditto Petty charges, ..	9 6 8		
Ditto A. Grote, Esq., in advance for publication charges of Mr. Moore's papers on Lepidoptera, £50, ..	571 6 10		
		8,194 15 5	8,893 14 6
LIBRARY.			
Paid Commission on collecting Bills, ..	0 4 6		
Ditto Land	26 1 3		
Ditto Book	476 1 0		
Ditto Salary	38 5 6		
Ditto Subscription to the Calcutta Review, ..	16 0 0		
Ditto ditto to the Medical Gazette, ..	15 0 0		
Ditto ditto to Stray Feathers, ..	11 0 0		
Ditto ditto to	12 12 0		
Ditto purchase Messrs. Trübner & Co., ..	1,352 8 1		
Ditto ditto through Messrs. Friedlander, ..	557 14 1		
Ditto ditto through Bernard Quaritch, ..	182 4 10		
Ditto ditto through Lt.-Col. H. H. Godwin-Austen, ..	187 5 0		
Ditto ditto through Ernest Leroux, ..	44 13 6		
Ditto ditto in Calcutta, ..	296 9 6		
Ditto Salary for Cataloguing Library Books, ..	352 4 0		
Ditto ditto for Persian Library Books, ..	352 7 3		
Ditto ditto for Mr. Hodgson's Nepalese Sans. MSS., ..	230 7 9		
Ditto ditto for numbering Library Books, ..	21 4 0		
Ditto for Kheroah cloth for Sans. MSS., ..	70 6 0		
Ditto Tape for ditto, ..	5 0 0		
Ditto Paste-board for Sans. MSS. ..	83 8 9		
Ditto Insufficient and Bearing Postage, ..	9 13 6		
Ditto Petty charges, ..	29 14 3		
		4,372 0 9	3,161 7 7
Carried over, Rs.	12,567 0	212,055 6	1

RECEIPTS.		1877.	1876.
Brought over, Rs. 32,248 13		8	1,79,412 5 9
INTEREST ON VESTED FUND.			
Received interest on Government Securities from the Bank of Bengal, ..	7,583 0 0	7,583 0 0	
DR. STOLICZKA MEMORIAL FUND.			
Received Subscription to the Fund, ..	16 0 0	16 0 0	181 0 0
DR. OLDHAM MEMORIAL FUND.			
Received Subscription to the Fund, ..	1,068 0 0	1,068 0 0	156 0 0
PIDDINGTON PENSION FUND.			
Received interest on Government Security for Rs. 500, ..	27 8 0	27 8 0	630 12 0
COIN FUND.			
Sale proceeds of a Gold Coin, ..	17 0 0	17 0 0	
Bank of Bengal Fund account, ..		1,000 0 0	
Refund of Postage and Miscellaneous, ..		1,033 11 0	4,122 3 0

Carried over, Rs. 42,994 0 8 1,84,502 4 9

DISBURSEMENTS.				1877.	1876.
Brought over, Rs.				12,567 0	2 12,055 6 1
ESTABLISHMENT.					
Paid Establishment,	..	..	3,991 0 0	3,991 0 0	
CONTINGENT CHARGES.					
Paid Commission on Subscriptions collected,	..	..	44 11 3		
Ditto Purchase of Postage Stamps,	..	..	141 2 6		
Ditto Insufficient and Bearing Postage,	..	..	1 6 0		
Ditto Meeting charges,	..	..	270 10 0		
Ditto Advertising charges,	..	..	67 5 6		
Ditto Printing charges,	..	..	314 6 2		
Ditto Pension to Islam Khan,	..	..	36 0 0		
Ditto Fee for Stamping Cheques,	..	..	3 2 0		
Ditto Stationery,	..	..	202 0 0		
Ditto Binding Letter Files,	..	..	28 1 0		
Ditto Salary of Punkah Bearer,	..	..	34 10 9		
Ditto Purchase of Calcutta Directory,	..	..	14 0 0		
Ditto Subscription to the Army List,	..	..	19 0 0		
Ditto a copy of Indian Postal Guide,	..	..	1 0 0		
Ditto Carpenter for repairing and polishing Mahogany Table,	..	..	16 0 0		
Ditto Purchase of a Letter Copying Press,	..	..	34 2 6		
Ditto Potty charges,	..	..	126 0 9		
Ditto Ticea Coolies for bringing Glass Cases from New Museum building,	..	..	11 8 6		
Ditto on account of Oldham Memorial Fund, towards cost of pedestal of bust, £7/10s., @ 1s. 8½d. per rupee,	..	..	87 12 9	1,452 15 8	3,075 8 0
FURNITURE AND FITTINGS.					
Paid for 3 Teakwood large Glass Cases,	..	..	809 12 0		
Ditto 4 Teakwood Racks,	..	..	244 0 0		
Ditto 3 ditto Pigeon-hole Almirahs,	..	..	390 0 0		
Ditto 2 ditto Glass door Book Cases,	..	..	182 12 0		
Ditto 4 ditto Writing Tables,	..	..	212 8 0		
Ditto 1 ditto Dressing Table,	..	..	45 4 0		
Ditto matting for stair-case,	..	..	105 0 0		
Ditto ditto plain ditto for room,	..	..	51 0 0		
Ditto ditto cane ditto for upstairs,	..	..	76 6 0		
Ditto purchase 7 new pole Punkahs,	..	..	346 6 0		
Ditto repairing and regilding picture frames,	..	..	2,062 5 6		
Ditto supplying wooden cleats, chains, and fixing tickets to picture frames,	..	..	100 0 0		
Ditto G. G. Palmer, for cleaning and repairing paintings,	..	..	1,592 0 0		
Ditto Messrs. J. M. Edmond and Co. for supplying Writing Tables, Chairs, &c.,	..	..	1,222 0 0		
Ditto J. B. Norton, for Gas fittings,	..	..	591 4 0		
Ditto repairing and polishing Chiffoniers,	..	..	21 4 0		
Ditto repairing and painting 4 Busts,	..	..	20 0 0		
Ditto removing and fixing 2 Pedestals and Asoka Inscription,	..	..	30 0 0		
Ditto gilding letters on 2 marble Slabs,	..	..	24 2 0	8,125 15 6	2,361 14 0
Carried over, Rs.				26,136 15 4	17,492 12 1

RECEIPTS.

1877.

1876.

Brought over, Rs. 42,994 0 8 1,84,502 4 9

Rs.	42,994	0	8	1,84,502	4	9
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Examined and found correct.
 DAVID WALDIE,
 J. BLACKBURN.

ASIATIC SOCIETY'S ROOMS,
Calcutta, Jan. 1st, 1878.

DISBURSEMENTS.

1877.

1876.

Brought over, Rs. 26,136 15 4 17,492 12 1

VESTED FUND.

Paid Commission on selling Government

Securities for Rs. 17,000, .. 43 12 1

Ditto Brokerage on ditto ditto, .. 21 4 0

Ditto Fee on receiving Govt. Securities, .. 13 0 0

Ditto cost .. 0 8 0

78 8 1 1,50,962 0 10

INTEREST ON VESTED FUND.

Paid Commission on collecting interest on

Government Securities, .. 18 15 2

18 15 2

BUILDING.

Paid Messrs. Mackintosh, Burn and Co.

in full for repairing the Society's Pre-

mises, .. 7,569 13 6

7,569 13 6 10,039 7 6

TAXES.

Paid Police and Lighting rates, .. 192 0 0

Ditto House rate, .. 342 0 0

Ditto Water rate, .. 216 0 0

750 0 0

COIN FUND.

Purchase of 12 Gold Coins, .. 221 0 0

Postage, .. 0 10 0

221 10 0 81 13 0

DR. OLDHAM MEMORIAL FUND.

Remitted to Dr. G. E. Dobson, a draft

for £50, @ 1/8½d. per rupee, .. 592 9 6

Ditto ditto a draft for £52, @ 1s. 9d., .. 594 4 3

Ditto for advertising charges, .. 9 4 0

1,196 1 9 25 8 0

DR. STOLICZKA MEMORIAL FUND.

Paid freight, landing charges, &c. on two

cases from London, .. 20 15 3

20 15 3 658 10 9

PIDDINGTON PENSION FUND.

Paid Commission on collecting interest

on Government Security, .. 0 1 2

0 1 2 560 0 10

Bank of Bengal Fund account, .. 800 0 0

O. P. Fund, .. 1,000 0 0

Cons. of Sans. MSS., .. 1,000 0 0

Postage and Miscellaneous expenses, .. 1,075 15 9 2,633 14 9

BALANCE.

In the Bank of Bengal, viz.—

Account of Stoliczka Memorial Fund, 329 11 2

Account of Dr. Oldham Memorial Fund, 2 6 3

Account of Piddington Pension Fund, 98 2 0

Account of Asiatic Society of Bengal, 2,537 14 8

2,968 2 1

Cash in hand, .. 156 14 7

3,125 0 8 3,968 1 0

Rs. 42,994 0 8 1,86,422 4 9

ASIATIC SOCIETY'S ROOMS,
Calcutta, Jan. 1st, 1878.Examined and found correct,
J. BLACKBURN.
DAVID WALDIE.

STATEMENT, *Abstract of the Cash Account,*

	RECEIPTS.	1877.	1876.
BALANCE OF 1876.			
In the Bank of Bengal, viz.			
Dr. J. Muir's a/c., ..	898 10 0		
O. P. Fund, ..	2,140 12 10		
	<u>3,039 6 10</u>		
Cash in hand, ..	113 12 4		
		<u>3,153 3 2</u>	4,407 9 11
ORIENTAL PUBLICATIONS.			
Received by Sale of Bibliotheca Indica and			
by Subscription to ditto, ..	2,317 7 6		
Ditto Refund of Postage and packing, ..	61 10 9		
	<u>2,379 2 3</u>		2,507 13 3
GOVERNMENT ALLOWANCE.			
Received from General Treasury, at 500 Rs.			
per month, ..	6,000 0 0		
Ditto ditto Additional grant for the pub-			
lication of Sanskrit Works, at 250 Rs. per			
month, ..	3,000 0 0		
	<u>9,000 0 0</u>		9,000 0 0
CUSTODY OF ORIENTAL WORKS.			
Received Fine, ..	8 8 0		
		<u>8 8 0</u>	30 14 3
LIBRARY.			
Received by transfer from Asiatic Society the			
amount paid for Cataloguing the Persian			
MSS., ..	134 11 3		
		<u>134 11 3</u>	
Asiatic Society of Bengal, ..	1,000 0 0		
Babu Braj Bhushana Dass, ..	3 5 0		
Babu Ram Jivan Mukerjee, ..	15 0 0		
A. Krishnaiger, Esq., ..	1 2 0		
Babu Mehr Chand, ..	3 2 3		
Babu Hara Chandra Chaudhuri, ..	1 12 0		
C. J. Adams, Esq., ..	3 3 0		
The Government N. W. Provinces, ..	1,518 0 0		
P. Peterson, Esq., ..	8 1 0		
	<u>2,553 9 3</u>		219 8 6

Carried over, Rs. 17,229 1 11 16,165 13 11

No. 2.

Oriental Publication Fund, 1877.

DISBURSEMENTS.			1877.	1876.
ORIENTAL PUBLICATIONS.				
Paid for Advertising charges, ..	240	0	0	
Ditto, ..	16	0	0	
Ditto, ..	6	0	0	
Ditto Postage stamps, ..	120	9	6	
Ditto Freight for sending books, ..	109	1	0	
Ditto Commission on collecting bills, ..	1	11	0	
Ditto Coolies for removing books and Shelves, ..	10	2	3	
Ditto Extra man for counting and arranging Bibliotheca Indica, ..	9	8	0	
Purchase of two Teakwood racks, ..	122	0	0	
Ditto Petty Charges, ..	3	2	0	
			638	1 9 753 13 9
CUSTODY OF ORIENTAL WORKS.				
Paid Salary of the Librarian, ..	600	0	0	
Ditto Establishment, ..	724	0	0	
Ditto, ..	3	2	0	
Ditto, ..	7	4	0	
			1,334	6 0 1,332 12 0
LIBRARY.				
Paid Salary for Cataloguing Persian Library, ..	131	3	3	
Ditto Purchase of MSS., ..	266	10	6	
			397	13 9 70 0 0
CATALOGUE OF SANSKRIT MSS.				
Paid Salary for Cataloguing Sanskrit MSS., ..	480	0	0	
			480	0 0 420 0 0
GOBHILĪYA GRĪHYA SŪTRA.				
Paid Postage Stamps, ..	1	0	0	
			1	0 0 224 13 0
ĀIN-I-AKBARĪ.				
Paid Editing and Printing charges, ..	1,028	0	0	
Ditto Lithographing and Printing charges, ..	209	4	0	
Ditto Copying charges, ..	30	0	0	
Ditto preparing an index, ..	65	0	0	
			1,332	4 0 445 0 0
AKBARNĀMAH.				
Paid Editing and Printing charges, ..	2,553	2	0	
Ditto binding charges, ..	5	0	0	
			2,563	2 0 192 0 0
SĀMAVEDA SANHITĀ.				
Paid Editing and Printing charges, ..	3,281	9	0	
			3,281	9 0 2,100 8 9
Carried over, Rs.			10,028	4 6 5,538 13 6

RECEIPTS.	1877.	1876.
Brought over, Rs. 17,229	1 11 16,165	13 11

Rs. ..	17,229	1 11 16,165	13 11
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Examined and found correct.

J. BLACKBURN.

DAVID WALDIE.

ASIATIC SOCIETY'S ROOMS,
Calcutta, Jan. 1st., 1878.

DISBURSEMENTS.

		1877.	1876.
	Brought over, Rs.	10,028 4 6	5,538 13 6
BIOGRAPHICAL DICTIONARY.			
Paid Editing and Printing charges,	.. 352 0 0		
Ditto Copying charges,	.. 12 4 0		
		364 4 0	838 0 0
CHATURVARGA CHINTÁMANI.			
Paid Editing and Printing charges,	.. 1,845 11 0		
		1,845 11 0	1,220 0 0
TABAQÁT-I-NÁCIRÁ.			
Paid Printing charges,	.. 821 14 7		
		821 14 7	1,085 5 6
BHÁMATÍ.			
Paid Printing charges,	.. 332 0 0		
Ditto Freight,	.. 11 8 0		
		343 8 0	515 9 3
AGNI PURÁNA.			
Paid Editing and Printing charges,	.. 735 10 0		
		735 10 0	
MIMÁÑSÁ DARSANA.			
Paid Editing and Printing charges,	.. 326 6 0		
		326 6 0	
Babu Braj Bhusan Dass,	.. 2 11 6		
Babu Mehr Chand,	.. 0 2 6		
Sheoprosad Sardar,	.. 2 7 0		
The Government N. W. Provinces,	.. 18 0 0		
Dr. G. Bühler,	.. 0 4 0		
C. J. Adams, Esq.,	.. 3 3 3		
P. Peterson, Esq.,	.. 8 1 0		
		34 13 3	1,191 0 3
BALANCE.			
In the Bank of Bengal, viz.			
Dr. J. Muir's a/c.,	.. 898 10 0		
The Government N. W. P.			
for Beal's Oriental Dic-			
tionary a/c.,	.. 1,500 0 0		
O. P. Fund a/c.,	.. 129 7 1		
		2,528 1 1	
Cash in hand,	.. 200 9 6		
		2,728 10 7	3,153 3 2
		Rs. .. 17,229 1 11	13,541 15 8

Examined and found correct.

J. BLACKBURN.

DAVID WALDIE.

ASIATIC SOCIETY'S ROOMS,
Calcutta, Jan. 1st., 1878.

STATEMENT, *Conservation of Sanskrit MSS., in Account*

Cr.		1877.	1876.
BALANCE OF 1876.			
In the Bank of Bengal,	2,146 10 5		
Cash in hand,	3 14 6		
		2,150 8 11	4,370 0 11
Received from the Government of Bengal, the amount sanctioned towards the Conservation of Sanskrit MSS., being 2nd half of 1876-77,	1,600 0 0		
Ditto ditto 1st half of 1877-78,	1,600 0 0		
Sale proceeds of 32 copies Notices of Sanskrit MSS.,	32 0 0		
Refund of Postage Stamps,	0 10 0		
Refund of the amount from Pandita Ramana- natha Turkaratna paid on the 16th April 1877 for purchase of Sanskrit MSS.,	250 0 0		
Ditto fine of bearer's salary,	7 8 0		
Received from Asiatic Society of Bengal,	1,000 0 0		
		4,490 2 0	5,447 15 0

Rs. 6,640 10 11 9,817 15 11

Examined and found correct.

J. BLACKBURN.

DAVID WALDIE,

ASIATIC SOCIETY'S ROOMS,
Calcutta, Jan. 1st, 1878.

No. 3.

Current with the Asiatic Society of Bengal.

	Dr.	1877.	1876,
Paid Salary for preparing Catalogue of Sanskrit MSS.,	360	0	0
Ditto ditto for ".....",	240	0	0
Ditto ditto for ".....",	650	0	0
Ditto Contingent charges for Travelling Pandit,	4	8	0
Ditto Travelling Allowance for ditto ditto, ..	62	8	0
Ditto Copying charges for Sanskrit MSS.,..	74	8	9
Ditto Printing charges of Sanskrit MSS. Vol. IV. Part I. No. XII.,	329	12	0
Ditto ditto for Descriptive Catalogue of Sanskrit MSS.,	874	4	0
Ditto Dr. Rájendralála Mitra, as an advance for purchase of Sankskrit MSS.,	2,400	0	0
Ditto Pandita Ramanatha Turkaratna for ditto ditto,	250	0	0
Ditto Purchase of Stationery,	15	12	0
Ditto Fee to the Bank of Bengal for Stamping Cheques,	1	9	0
Ditto Purchase of Sanskrit MSS.,	323	0	0
Ditto Paste-board for ditto,	96	7	9
Ditto Kheroah cloth for ditto,	123	12	0
Ditto Tape for ditto,	11	2	6
Ditto Librarian, his Salary from May 1876 to April 1877,	150	0	0
Ditto Purchase of 2 Teak-wood Glass-door book-cases,	182	12	0
Ditto Salary for Bearer,	84	0	0
Ditto Binding charges for Sanskrit MSS., ..	19	12	0
Ditto Postage Stamps,	12	9	0
Ditto Freight for Sanskrit MSS.,	1	7	0
Ditto Telegram sent to Babu Harish Chandra at Benares,	6	0	0
Ditto for 1 Stamp,	4	0	0
Ditto Petty Charges,	13	14	9
	<hr/>	6,291	10 9 7,667 7 0
BALANCE OF 1877.			
In the Bank of Bengal,	312	0	2
Cash in hand,	37	0	0
	<hr/>	349	0 2 2,150 8 11
		Rs. 6,640	10 11 9,817 15 11

Examined and found correct.

J. BLACKBURN.

DAVID WALDIE.

ASIATIC SOCIETY'S ROOMS,

Calcutta, Jan. 1st, 1878.

*Shewing the Assets and Liabilities of the Asiatic Society of Bengal on
the 1st January, 1878.*

We have examined this account and see no reason to doubt its correctness.

J. BLACKBURN.
DAVID WALDIE.

STATEMENT NO. 5.

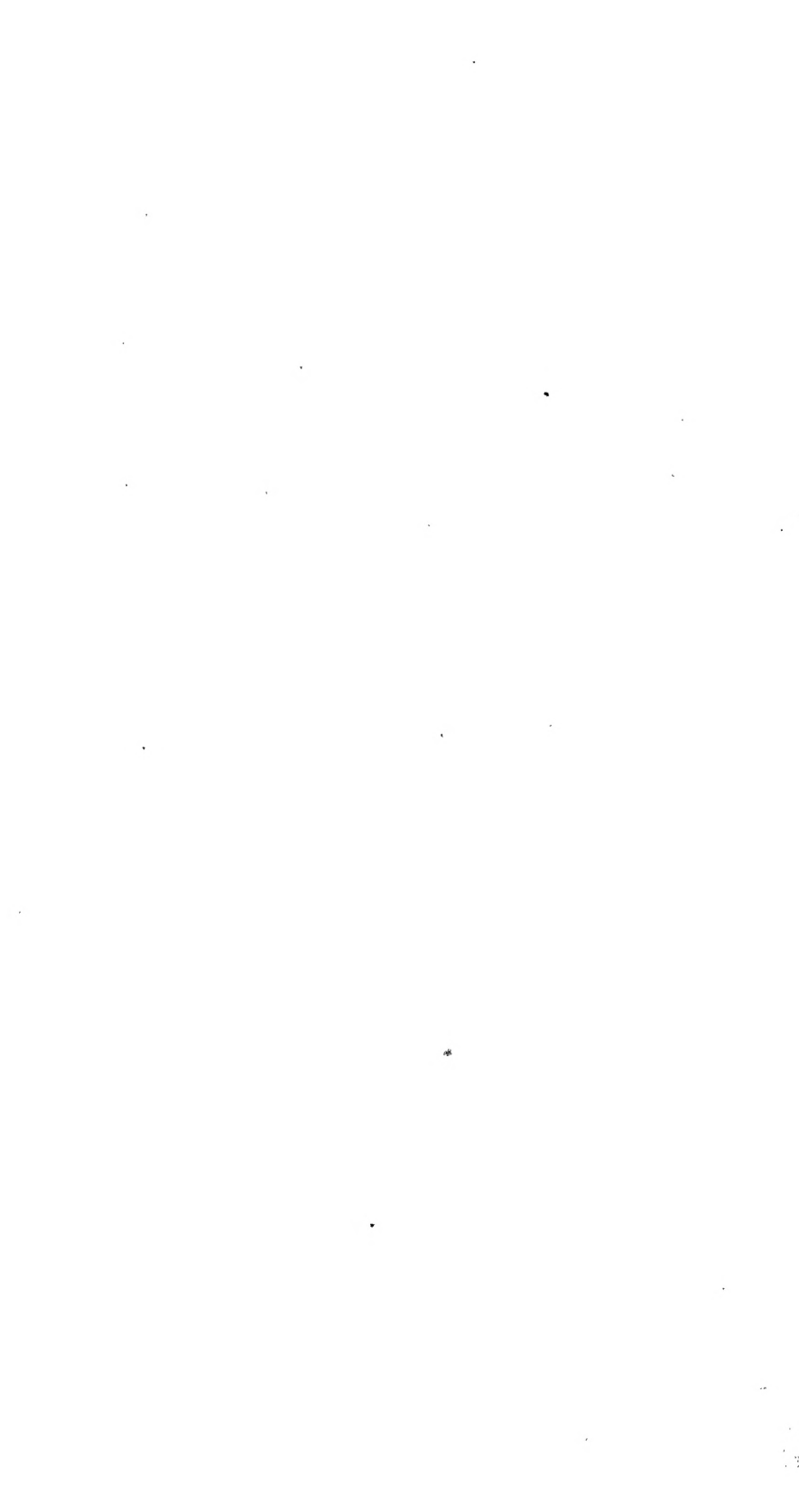
Shewing the Assets and Liabilities of the Asiatic Society of Bengal, O. P. Fund, on the 1st January, 1878.

ASSETS.				LIABILITIES.			
				Salary and Establishment for December 1877.			
				1877.	1876.		
In the Bank of Bengal, Rs. 2,528	1	1		110	5	4	110
Cash in hand,	200	9	6	250	8	0	153
Government Allowance for December 1877,	750	0	0				0
Bibliotheca Indica Sale and Subscription,	1,428	7	8				0
				411	8	3	749
				300	0	0	0
				418	0	0	0
				20	0	0	0
				20	0	0	0
				40	0	0	0
				96	0	0	0
				898	10	0	898
				1,500	0	0	0
				Ra. 4,064	15	7	1,990
							4

We have examined this account and see no reason to doubt its correctness.

J. BLACKBURN.
DAVID WALDIE.

ASIATIC SOCIETY'S ROOMS,
Calcutta, Jan. 1st, 1878.



[APPENDIX.]

LIST OF MEMBERS
OF THE
ASIATIC SOCIETY OF BENGAL.
ON THE 31ST DECEMBER 1877.

LIST OF ORDINARY MEMBERS.

~~~~~  
R = Resident. N. R. = Non-Resident. N. S. = Non-Subscribing.  
L. M. = Life Members. F. M. = Foreign Member.  
~~~~~

N. B.—Members who have changed their residence, since this list was drawn up, are requested to give intimation of such a change to the *Secretaries*, in order that the necessary alterations may be made in the subsequent edition. Errors or omissions in the following list should also be communicated to the *Secretaries*.

Members who are about to leave India and do not intend to return, are particularly requested to notify to the *Secretaries*, whether it be their desire to continue as members of the Society, otherwise, in accordance with Rule 40 of the By-laws, their names will be removed from the list at the expiration of three years from the time of their leaving India.

Date of Election.		
1860 Dec. 5.	R.	Abdul-Latif, Khán Bahádúr, Maulawí. <i>Calcutta.</i>
1868 Sept. 2.	N.S.	Adam, R. M. <i>Europe.</i>
1860 July 4.	N.R.	Ahmad Khán Bahádúr, Sayyid, c. s. i. <i>Benares.</i>
1872 April 3.	N.R.	Ahsan-ullah, Nawáb. <i>Dacca.</i>
1860 April 4.	N.R.	Aitchison, J. E. T., M. D. <i>Jullundur.</i>
1871 June 7.	N.R.	Alexander, J. W., Tutor to minor Rájá of Darbhanga. <i>Darbhanga, Tirhut.</i>
1866 Jan. 17.	N.S.	Allan, Lieut.-Col. A. S. <i>Europe.</i>
1860 Oct. 3.	R.	Amír Alí, Khán Bahádúr, Nawáb. <i>Calcutta.</i>
1874 June 3.	R.	Amír Alí, Sayyid, Barrister at Law, High Court. <i>Calcutta.</i>
1865 Jan 11.	R.	Anderson, John, M. D., F. L. S., Superintendent, Indian Museum. <i>Calcutta.</i>
1872 June 5.	F.M.	Anderson, A. <i>Europe. (care of Messrs. Colvin, Cowie & Co. Calcutta.)</i>
1875 June 2.	R.	Apcar, J. G., Barrister at Law. <i>Calcutta.</i>
1875 Feb. 3.	R.	Armstrong, J., Surgeon, B. Army. <i>Calcutta.</i>
1877 June 6.	R.	Arnold, Henry Kerchever Walter, Asst. Secretary, Indian Museum. <i>Calcutta.</i>
1877 July 4.	R.	Ashgar Ali Khan, Nawab Diler Jang Bahádúr, c. s. i. <i>Calcutta.</i>
1871 Sept. 6.	N.R.	Atkinson, Edwin Felix Thomas, B. A., c. s., Offg. Acct. General, N. W. P. <i>Allahabad.</i>
1869 Feb. 3.	N.R.	Attar Singh Bahádúr, Sirdár., M. V. F. Chief of Bhadour. <i>Ludiana.</i>
1870 Feb. 2.	N.R.	Baden-Powell, Baden Henry, c. s., Conservator of Forests. <i>Lahore.</i>
1873 Aug. 6.	N.R.	Badgley, Major William Francis, s. c., Offg. Deputy Superintendent of Surveys. <i>Shillong.</i>
1862 Feb. 5.	R.	Baisák, Gaurdás, Bábu, Depy. Magistrate. <i>Serampur.</i>

Date of Election.		
1865 Nov. 7.	N.R.	Ball, Valentine, M. A., F. G. S., Geol. Survey of India. <i>Geological Survey Office, Calcutta.</i>
1860 Nov. 1.	R.	Banerjee, Rev. Kristno Mohun, LL. D. <i>Calcutta.</i>
1876 June 7.	R.	Baness, John Frederick, Chief Draftsman, Surveyor General's Office. <i>Calcutta.</i>
1873 Mar. 5.	N.S.	Barclay, G. W. W., M. A. <i>Europe.</i>
1869 Dec. 1.	N.R.	Barker, R. A., M. A., Civil Surgeon. <i>Bogra.</i>
1860 July 4.	R.	Batten, George Henry Maxwell, C. S., Barrister at Law, Offg. Secretary to the Govt. of India, Dept. of Revenue, Agriculture and Commerce. <i>Calcutta.</i>
1859 May 4.	R.	Bayley, Edward Clive, The Hon. Sir, B. C. S., K. C. S. I., C. I. E. <i>Calcutta.</i>
1873 Feb. 5.	R.	Bayne, R. R., M. R. I. B. A., Draughtsman. Chief En- gineer's Office, E. I. Railway. <i>Calcutta.</i>
1864 Sept. 7.	N.R.	Beames, John, B. C. S., Magistrate and Collector. <i>Calcutta.</i>
1841 April 7.	N.S.	Baker, F. L., B. C. S., (retired). 62, <i>Montague Square, Hyde Park, London.</i>
1876 June 7.	N.R.	Behrendt, J., Asst. Professor, Patna College. <i>Patna.</i>
1867 July 3.	R.	Belletty, N. A., Surveyor General's Office. <i>Calcutta.</i>
1862 Oct. 8.	R.	Bernard, Charles Edward, C. S., Offg. Addl. Secy. to the Govt. of India. <i>Calcutta.</i>
1872 Aug. 7.	R.	Beverley, Henry, M. A., C. S., Offg. District and Sessions Judge, 24-Pergunnahs. <i>Calcutta.</i>
1876 Nov. 15.	N.R.	Beveridge, Henry, C. S., District and Sessions Judge. <i>Rangpur.</i>
1875 July 7.	N.R.	Black, F. C., Asst. Engineer. <i>Hamirpur, N. W. P.</i>
1873 Dec. 3.	R.	Blackburn, J., Manager, Oriental Gas Company. <i>Calcutta.</i>
1857 Mar. 4.	R.	Blanford, H. F., A. R. S. M., F. G. S. Meteorological Reporter, Govt. of India. <i>Calcutta.</i>
1859 Aug. 3.	R.	Blanford, W. T., A. R. S. M., F. R. S., F. G. S. Depy. Supdt. Geological Survey of India. <i>Geological Survey Office, Calcutta.</i>
1873 Aug. 6.	N.R.	Bligh, W. G., Asst. Engineer, P. W. D. <i>Agra.</i>
1873 April 2.	R.	Blissett, T., Superintendent Telegraph Stores. <i>Alipur.</i>
1864 April 6.	R.	Blochmann, Henry, M. A., Principal of the Madrasah. <i>Calcutta.</i>
1877 May 2.	R.	Bourdillon, James Austin, C. S., Offg. Inspector Ge- neral of Registration. <i>Calcutta.</i>
1876 Nov. 15.	N.S.	Bowie, Major M. M. <i>Europe.</i>
1868 Jan. 15.	N.R.	Boxwell, John, C. S., Magistrate and Collector. <i>Dum- ka, Sonthal Pergunnahs.</i>
1876 May 4.	R.	Bradshaw, A. F., Surgeon Major, Surgeon to the Com- mander-in-Chief. <i>Calcutta.</i>
1860 Mar. 7.	R.	Brandis, Dietrich, P.H. D., Inspector General of Forests. <i>Calcutta.</i>
1872 June 5.	R.	Brooks, W. E., C. E., Supdg. Engineer, E. I. Railway. <i>Howrah.</i>

Date of Election.		
1871 Jan. 4.	R.	Brough, R. S., Offg. Electrician, Telegraph Store Department. <i>Calcutta</i> .
1866 Nov. 7.	N.R.	†Browne, Col. Horace Albert, Commissioner of Pegu. <i>Rangoon</i> .
1871 Sept. 6.	N.R.	Buckle, H., Deputy Commissioner. <i>Toungthoo, Burmah</i> .
1869 Jan. 20.	N.R.	Cadell, Alan, B. A., C. S., Settlement Officer. <i>Banda</i> .
1863 June 3.	N.S.	Campbell, Sir George, K. C. S. I. <i>Europe</i> .
1873 Mar. 5.	R.	Cappel, A. J. L., Depy. Director General of Telegraphs. <i>Calcutta</i> .
1876 Aug. 2.	N.R.	Carnegy, P. T., Offg. Political Agent and Depy. Commissioner of Naga Hills. <i>Samaguting, Assam</i> .
1876 Nov. 15.	R.	Cayley, Surgeon-Major H., Surgeon, Mayo Native Hospital. <i>Calcutta</i> .
1875 April 4.	R.	Chambers, Dr. E. W. <i>Calcutta</i> .
1868 Aug. 5.	N.R.	Chandramohan Gosvámi, Pandit. <i>Gauhati</i> .
1861 March 1.	N.R.	Chaudhuri, Harachandra Bábu, Zamindar. <i>Sherpur, Mamansingh</i> .
1874 Aug. 5.	N.S.	Chennell, A. W., Asst. Surveyor, Survey Dept. <i>Europe</i> .
1875 June 2.	N.R.	Chennell, T., Manager, Eastern Assam Tea Co. Ltd. <i>Dibrúghar, Assam</i> .
1871 Sept. 6.	N.R.	Chisholm, R. F. <i>Bombay</i> .
1868 Feb. 5.	N.R.	Clark, Lieut.-Col. Edgar Gibson, s. c., Asst. Commissioner. <i>Kheri, Oudh</i> .
1877 Aug. 30.	R.	Clarke, Capt. Henry Wilberforce, E. E., Depy. Consulting Engr., Govt. of India, for Guaranteed Railways. <i>Calcutta</i> .
1872 Aug. 7.	N.R.	Clutterbuck, Capt. T. St. Quintin., Wing Commander 29th N. I. <i>Tullagong</i> .
1877 Mar. 7.	R.	Colvin, The Hon. Bazett Wetenhall, c. s., Member of the Governor General's Council. <i>Calcutta</i> .
1874 Nov. 4.	N.R.	Constable, Archibald, Asst. Engineer, Railway Dept. <i>Lucknow</i> .
1868 Dec. 2.	R.	Cooke, J. E., Asst. Comptroller General. <i>Calcutta</i> .
1874 July 1.	N.R.	Cowan, Capt. Samuel Hunter, s. c., Asst. Supdt. Soane Irrigation Survey, Behar. <i>Hazáribágh</i> .
1876 Mar. 1.	R.	Crawford, James, B. A., C. S., Barrister at Law, Offg. Registrar High Court. <i>Calcutta</i> .
1877 June 6.	R.	Croft, A. W., M. A., Offg. Director of Public Instruction. <i>Calcutta</i> .
1874 Mar. 4.	N.R.	Crombie, Alexander, M. D., Civil Surgeon. <i>Dacca</i> .
1877 Feb. 7.	N.R.	Crooke, William, c. s., Offg. Joint Magistrate. <i>Go-rákhpur</i> .
1873 Aug. 6.	R.	Cunningham, David Douglas, M. B., Special Asst. to the Sanitary Commissioner with the Govt. of India. <i>Calcutta</i> .
1847 June 2.	F.M.	Dalton, Major General Edward Tuite, c. s. i., s. c. (retired). <i>Europe</i> . (care of Messrs. Gillanders, Arbuthnot and Co. <i>Calcutta</i> .)

Date of Election.		
1870 May 4.	N.R.	Damant, Guybon Henry, c. s., Offg. Depy. Commissioner. <i>Garó Hills.</i>
1873 Dec. 3.	N.R.	Dames, Mansel Longworth, c. s., Asst. Commissioner. <i>Dera Ghazi Khan.</i>
1864 Dec. 5.	N.R.	Dás, Gurucharan, Bábu. <i>Krishnagar.</i>
1865 June 7.	N.R.	Dás, Jaykissen, Bahádur, Rájá, c. s. i. <i>Cawnpore.</i>
1871 June 7.	R.	Dás, Rámakrishna, Bábu. <i>Calcutta.</i>
1861 Nov. 6.	F.M.	Davies, Sir Robert Henry, K. C. S. I., C. S. <i>Europe.</i>
1869 April 7.	F.M.	Day, Dr. Francis, F. L. S., F. Z. S. <i>Europe.</i>
1856 June 4.	N.S.	DeBourbel, Lieut.-Col. Raoul, R. E. <i>Europe.</i>
1870 Feb. 2.	N.R.	DeFabeck, Surgeon-Major Frederick William Alexander, Deoli Irregular Force. <i>Deoli.</i>
1872 Aug. 7.	R.	Dejoux, P., Executive Engineer. P. W. D. <i>Calcutta.</i>
1869 Oct. 6.	N.R.	Delmerick, J. G., Extra Asst. Commissioner. <i>Delhi.</i>
1873 Jan. 8.	N.R.	Dennys, H. L., Dist. Supdt. of Police. <i>Sambalpur C. P.</i>
1862 May 7.	N.R.	Dhanapati Singh Dughar, Raí Bahádur. <i>Azinganj.</i>
1853 Sept. 7.	N.S.	Dickens, Major-General Craven Hildesley, R. A., C. S. I. <i>Europe.</i>
1870 May 4.	F.M.	Dobson, G. E., B. A., M. B., F. L. S., <i>Royal Victoria Hospital. Netley. Southampton.</i>
1875 Mar. 3.	N.R.	Dodgson, Walter. <i>Rangpur.</i>
1859 Sept. 7.	N.R.	Douglas, Major-General C., R. A. <i>Lucknow.</i>
1875 Mar. 3.	R.	Douglas, J., Offg. Supdt. of Telegraphs. <i>Calcutta.</i>
1867 June 5.	N.R.	Duthoit, William, c. s., Magistrate and Collector. <i>Shahjahanpur. N. W. P.</i>
1873 Aug. 6.	R.	Dutt, Jogesh Chunder, Bábu. <i>Calcutta.</i>
1877 Aug. 30.	N.R.	Dutt, Kedarnath, Bábu, Depy. Magistrate. <i>Bogra.</i>
1869 June 2.	N.R.	Dutt, Udaychand, Bábu. <i>Furidpur.</i>
1873 April 2.	R.	Dutt, Umesh Chunder, Bábu. <i>Calcutta.</i>
1870 Mar. 8.	L.M.	Edinburgh, H. R. H. The Duke of. <i>Europe.</i>
1863 May 6.	N.R.	Edgar, John Ware, c. s. i., c. s., Offg. Magistrate and Collector. <i>Shahabad. L. P.</i>
1874 Dec. 2.	N.R.	Egerton, The Hon. Robert Eyles, c. s., c. s. i., Lieut.-Governor of the Panjab. <i>Lahore.</i>
1871 Dec. 2.	R.	Eliot, J., M. A., Meteorological Reporter to Govt. of Bengal. <i>Calcutta.</i>
1846 Jan. 7.	N.S.	Elliot, Sir Walter. <i>Wolfelee, Hawick.</i>
1859 Nov. 2.	N.R.	Elliot, Charles Alfred, c. s., Special Duty. <i>Madras.</i>
1871 Oct. 4.	N.R.	Evezard, Col. G. E. <i>Pina.</i>
1863 Oct. 7.	N.S.	Ewart, Surgeon-Major J., M. D. <i>Europe.</i>
1859 Dec. 7.	R.	Fath Ali, Maulawí. <i>Calcutta.</i>
1851 May 7.	N.S.	Fayrer, Sir Joseph, K. C. S. I. <i>Europe.</i>
1863 Jan. 15.	N.R.	Fedden, Francis, Asst. Supdt. Geological Survey of India. <i>Geol. Survey Office. Calcutta.</i>
1876 Jan. 5.	R.	Feistmantel, Ottokar, M. D., Palæontologist, Geological Survey of India. <i>Calcutta.</i>
1876 July 5.	N.R.	Foulkes, The Rev. Thos., Chaplain. <i>Bangalore.</i>
1868 May 6.	N.R.	Field, Charles Dickenson, M. A., LL. D., c. s., Barrister at Law, District Sessions Judge. <i>Burdwan.</i>

Date of Election.		
1869 Sept. 1.	N.R.	Fisher, John Hadden, c. s., Depy. Commissioner. <i>Jabalpur.</i>
1872 Dec. 4.	N.R.	Forbes, Major John Greenlaw, R. E., Supdg. Engineer. S. W. Circle, Bengal. <i>Calcutta.</i>
1875 Jan. 6.	N.R.	Forbes, Capt. C. J. F., F. R. G. S. <i>Shwegyeen, B. Burma.</i>
1861 Feb. 6.	N.R.	Forest, R., c. E. <i>Dehra.</i>
1869 Oct. 12.	F.M.	Forlong, Lieut.-Col. J. G. R., M. S. C. 24, <i>St. James Square, London.</i>
1863 June 3.	N.S.	Forsyth, Sir Thomas Douglas, c. s., K. C. S. I., C. B. <i>Europe</i>
1871 Nov. 1.	N.R.	Foster, J. M., M. E. C. S., Medical Officer, Assam Co. <i>Nazira, Assam.</i>
1873 July 2.	N.R.	Fraser, Capt. E., Asst. Resident. <i>Bussorah, Persian Gulf.</i>
1869 Sept. 1.	N.R.	Fryer, Major G. E., Depy. Commissioner Thonkwa District. <i>Maobung, B. Burmah.</i>
1867 Sept. 4.	R.	Fyfe, The Rev. W. C., M. A., Principal, Free Church College. <i>Calcutta.</i>
1873 Dec. 3.	N.R.	Gamble, J. S., B. A., Asst. to Inspector General of Forests. <i>Pankabari, Darjiling.</i>
1871 Aug. 2.	N.R.	Gangaprasad, Munshi, Depy. Collector. <i>Juunpur.</i>
1874 July 1.	N.R.	Gardner, David Mason, c. s., Magistrate and Collector. <i>Azamgarh.</i>
1859 Aug. 3.	L.M.	Gastrell, Major-General James Eardley, (retired). 17, <i>Loudon Road, Wimbledon, London, S. W.</i>
1867 Dec. 4.	R.	Gay, E. Esq., M. A., c. s., Depy. Comptroller General. <i>Calcutta.</i>
1877 Aug. 30.	R.	Ghosh, Jnanendra Chandra Bábu. <i>Calcutta.</i>
1871 May 3.	R.	Ghosh, Káliprasanna Bábu. <i>Calcutta.</i>
1869 Feb. 3.	R.	Ghosh, Pratápachandra Bábu, B. A. <i>Calcutta.</i>
1870 May 4.	R.	Ghoshál, Satyanand Rájá. <i>Calcutta.</i>
1875 July 7.	N.S.	Girdlestone, Charles Edward Ridgway, c. s. <i>Europe.</i>
1861 Feb. 5.	F.M.	Godwin-Austen, Lieut.-Colonel H. H., F. Z. S., F. R. G. S. <i>United Service Club, St. James', London.</i>
1862 July 2.	N.R.	Gordon, Robert, c. E., Executive Engineer P. W. D., <i>Henzada, B. Burmah.</i>
1869 July 7.	N.R.	Gordon, James Davidson, c. s., c. s. I., Offg. Chief Commissioner. <i>Mysore.</i>
1875 July 7.	N.S.	Gouldsbury, J. R. E. <i>Europe.</i>
1863 Nov. 4.	F.M.	Gowan, Major-General J. Y. <i>Woodlands, Wimbledon, London.</i>
1877 Nov. 7.	L.M.	Grant, Alexander, M. I. C. E., Director of State Railways, Western System. <i>Simla.</i>
1866 June 6.	N.S.	Gribble, Thomas William, c. s. <i>Europe.</i>
1876 Nov. 15.	N.R.	Grierson, George Abraham, c. s., Offg. Joint Magistrate. <i>Madhubani, Darbhanga, Tirhut.</i>
1861 Sept. 4.	N.R.	Griffin, Lepel Henry, B. C. S., Depy. Commissioner and Offg. Secy. to the Govt. of Panjab. <i>Kapurthala, Panjab.</i>

Date of Election.		
1861 Feb. 6.	N.R.	Growse, Frederick Salmon, M. A., C. S., Joint Magistrate. <i>Bulandshahr, N. W. P.</i>
Jan. 6.	N.S.	Gunn, John Sutherland, M. B., Surgeon, 4th Bengal Cavalry. <i>Europe.</i>
1871 June 7.	R.	Habiburrahmán, Maulavi. <i>Calcutta.</i>
1867 July 3.	N.R.	Hacket, Charles Augustus, Asst. Supdt. Geol. Survey of India. <i>Calcutta.</i>
1861 Feb. 2.	N.R.	Harrison, A. S., B. A., Principal, Muir Central College. <i>Allahabad.</i>
1877 Sept. 27.	R.	Hart, J., Attorney at Law. <i>Calcutta.</i>
1859 Oct. 6.	N.S.	Haughton, Col. John Colpoys, C. S. I. <i>Europe.</i>
1874 Jan. 7.	R.	Heintze, C., Messrs. Ullmann, Hirschhorn and Co. <i>Calcutta.</i>
1875 March 3.	N.R.	Hendley, Dr. Thomas Holbein, Residency Surgeon. <i>Jaipur, Rájputána.</i>
1875 Aug. 4.	N.S.	Hewitt, James Francis Katherinus, C. S., Magistrate and Collector. <i>Europe.</i>
1868 Aug. 5.	N.R.	Hobart, Robert Thompson, C. S., Depy. Inspector General of Police. <i>Allahabad.</i>
1872 Dec. 4.	R.	Hoernle, Rev. A. F. R., PH. D. Cathedral Mission College. <i>Calcutta.</i>
1868 Nov. 4.	N.R.	Holroyd, Major William Rice Morland, Director of Public Instruction. <i>Lahore, Punjab.</i>
1873 Jan. 8.	L.M.	Houstoun, G. L., F. G. S. <i>Johnstone Castle. Renfrewshire, Scotland.</i>
1863 Jan. 15.	N.R.	Howell, Mortimer Sloper, C. S., Joint Magistrate. <i>Fatíhpur.</i>
1866 Feb. 7.	N.S.	Hoyle, G. W., Attorney at Law. <i>Not known.</i>
1867 Aug. 7.	N.R.	Hughes, T. H., A. R. S. M., F. G. S., Asst. Geol. Survey of India. <i>Europe.</i>
1866 Jan. 17.	N.R.	Hughes, Captain W. G., M. S. C., Depy. Commissioner, Hill Tracts. <i>Arracan.</i>
1870 Jan. 5.	N.R.	Hume, Allan Octavian, C. B., C. S., Secy. to the Govt. of India, Dept. of Revenue, Agriculture and Commerce. <i>Simla.</i>
1870 June 1.	N.S.	Hunter, William Wilson, C. S., LL. D., Director General of Gazetteers to the Govt. of India. 6, <i>Grosvenor St., Edinburgh, Scotland.</i>
1868 April 1.	N.S.	Hyde, Col. Henry, R. E. <i>Europe.</i>
1872 Dec. 4.	N.R.	Ibbetson, Denzil Charles Jelf, C. S., Asst. Commissioner. <i>Karnál, Panjab.</i>
1866 Mar. 7.	N.R.	Irvine, William, C. S., Joint Magistrate. <i>Furruskabad.</i>
1871 Mar. 8.	R.	Isaac, T. S., C. E., Supdg. Engineer, P. W. D., Presidency Circle. <i>Calcutta.</i>
1874 Feb. 4.	N.R.	Jackson, Surgeon Major Charles Julian. <i>Muzaffarpur.</i>
1876 July 5.	R.	Jarrad, Lieut. F. W., R. N., F. R. A. S., Depy. Superintendent, Marine Survey Dept. <i>Calcutta.</i>

Date of Election.		
1866 Feb. 7.	N.R.	Johnson, W. H. <i>Not known.</i>
1862 Mar. 5.	N.R.	Johnstone, Major James William Hope, Depy. Commissioner. <i>Bannu, Panjab.</i>
1867 Dec. 4.	N.R.	Johnstone, Lieut.-Col. James, Political Agent. <i>Manipur, Assam.</i>
1873 Dec. 3.	N.R.	Johore, H. H., Maharaja of, K. C. S. I. <i>New Johore, Singapore.</i>
1873 April 2.	N.R.	Jones, Frederick, C. S., Magistrate and Collector. <i>Tipperah.</i>
1875 Nov. 3.	N.R.	Jones, Samuel Simpson, B. A., C. S., Asst. Commissioner. <i>Hazareebagh.</i>
1869 April 7.	R.	Kabiruddin Ahmad, Maulawí. <i>Calcutta.</i>
1861 Dec. 4.	N.R.	Kempson, M., M. A., Director of Public Instruction. <i>N. W. P. Allahabad.</i>
1874 Dec. 2.	N.R.	Khudábakhsh Khan, Maulawí. <i>Patna.</i>
1867 Dec. 4.	R.	King, G., M. B., F. L. S., Supdt. Royal Botanical Gardens. <i>Sibpur, Calcutta.</i>
1867 Mar. 6.	N.R.	King, Capt. H. W. <i>P. & O. Co.'s Office, Calcutta.</i>
1862 Jan. 15.	N.R.	King, W., Jr., A. B., F. G. S., Depy. Supdt. for Madras, Geol. Survey of India. <i>Geol. Surv. Office.</i>
1875 Dec. 1.	R.	Knight, J. B., C. I. E. <i>Calcutta.</i>
1877 Jan. 17.	N.R.	Kishor, Kumara Radha Deb, Juvraj of Hill Tipperah. <i>Tipperah.</i>
1860 May 5.	R.	Kurz, Sulpiz, Curator of the Herbarium, Royal Botanical Gardens. <i>Sibpur, Calcutta.</i>
1877 Sept. 27.	N.R.	LaTouche, James John Digges, B. A., C. S., Offg. Joint Magistrate. <i>Muttra.</i>
1859 Dec. 7.	N.S.	Leonard, Hugh, M. A., C. E. <i>Europe.</i>
1870 July 6.	R.	Lethbridge, E. Roper, M. A., C. I. E. <i>Calcutta.</i>
1869 June 2.	N.R.	Leupolt, John Cunningham, C. S., Joint Magistrate. <i>Etah.</i>
1873 Feb. 5.	R.	Lewis, Timothy Richards, M. B., Special Asst. to Sanitary Commissioner with Govt. of India. <i>Calcutta.</i>
1864 Nov. 2.	R.	Locke, H. H., Principal, School of Art. <i>Calcutta.</i>
1866 Jan. 17.	N.R.	Low, James, Surveyor, G. T. Survey, <i>Thayetmyo, B. Burmah.</i>
1869 July 7.	R.	Lyll, Charles James, B. A., C. S., Under Secretary Govt. of India, Dept. of Revenue, Agriculture and Commerce. <i>Calcutta.</i>
1876 May 4.	R.	Lyll, John M., Messrs. Lyall, Rennie and Co. <i>Calcutta.</i>
1875 Jan. 6.	R.	Lydekker, Richard, Palæontologist, Geol. Survey of India. <i>Geological Survey Office, Calcutta.</i>
1870 April 6.	L.M.	Lyman, B. Smith. <i>Japan.</i>
1866 June 6.	N.S.	Macdonald, Lieut.-Col. J., B. S. C., Depy. Superintendent of Surveys. <i>Europe.</i>

Date of Election.		
1876 Dec. 6.	N.R.	Macdonald, J. C., Supdt. Tarai District. <i>Nynee Tal.</i>
1873 May 7.	N.S.	Mackay, W., C. E. <i>Europe.</i>
1873 Dec. 3.	R.	McLeod, Surgeon-Major Kenneth, M. D., Secretary to the Surgeon-General, Indian Medical Dept. <i>Cuttack.</i>
1848 April 5.	L.M.	MacLagan, Major-General Robert, R.E., F.R.S.E., F.R.G.S., Secretary to the Govt. of the Panjab. <i>Lahore.</i>
1867 July 3.	N.S.	Macnamara, Dr. Charles. <i>Europe.</i>
1868 Dec. 2.	N.R.	Macauliffe, Michael, B. A., C. S., Offg. Depy. Commissioner. <i>Montgomery, Panjab.</i>
1874 Jan. 7.	N.R.	Magrath, Charles Frederick, B. A., C. S., Joint Magistrate. <i>Monghyr.</i>
1877 June 6.	N.R.	Maharaja of Dharbhanga. <i>Dharbhanga.</i>
1867 April 3.	R.	Mainwaring, Lieut.-Col. George Byres, s. c. <i>Calcutta.</i>
1876 Dec. 6.	N.S.	Malleson, Col. G. B., C. S. I. <i>Europe.</i>
1864 July 6.	R.	Mallik, Devendra, Babu. <i>Calcutta.</i>
1869 Sept. 1.	R.	Mallik, Yadulal, Babu. <i>Calcutta.</i>
1867 Mar. 6.	R.	Mallik, Yogendranath, Babu. <i>Anul.</i>
1872 Nov. 6.	N.R.	Man, E. H., Asst. Supdt. <i>Port Blair, Andamans.</i>
1869 July 7.	N.R.	Markham, Alexander Macaulay, C. S., Joint Magistrate. <i>Basti, N. W. P.</i>
1874 Aug. 5.	F.M.	Marsh, Capt. Hipplesley Cunliffe, s. c., 2nd in Command, 18th Bengal Cavalry. <i>Europe.</i>
1873 July 2.	N.R.	Marshall, C. W. <i>Berhampur.</i>
1873 Aug. 6.	N.S.	Marshall, Lieut.-Col. William Elliot. <i>Europe.</i>
1877 Feb. 7.	N.R.	Marshall, Capt. Geo. Fred. Leicester, R. E., Eastern Jumna Canal Division, N. W. P. <i>Saharunpur.</i>
1876 Jan. 5.	N.R.	McGregor, W., Supdt. Telegraphs, <i>Dhubri. Assam.</i>
1860 Mar. 7.	R.	Medlicott, H. B., M. A., F. R. S., F. G. S., Supdt. Geological Survey of India. <i>Calcutta.</i>
1877 Mar. 7.	R.	Medlycott, Adolphus Edwin, Ph. D., The Rev. Vicar Catholic Church. 3, <i>Cullen Place, Howrah.</i>
1871 Sept. 6.	N.R.	Miles, Lieut.-Colonel S. B., s. c., Political Agent. <i>Muskat.</i>
1870 July 6.	R.	Miller, A. B., B. A., Barrister at Law, Official Assignee. <i>Calcutta.</i>
1874 May 6.	N.R.	Minchin, F. J. V. <i>Aska, Garissa.</i>
1875 Aug. 4.	N.S.	Minchin, Lieut.-Col. C. C., Political Agent and Supdt. Bahawalpur State. <i>Europe.</i>
1856 Mar. 5.	R.	Mitra, Rajendralala, Babu, Rai Bahadur, C. I. E., LL. D. <i>Calcutta.</i>
1876 Dec. 6.	N.R.	Mockler, Capt. E., Political Agent. <i>Gwadar.</i>
1874 July 1.	N.R.	Molesworth, G. L., C. E., Consulting Engineer to Govt. of India for State Railways. <i>Simla.</i>
1854 Dec. 6.	R.	Morris, The Hon'ble George Gordon, B. C. S., Judge, High Court. <i>Calcutta.</i>
1864 Nov. 2.	R.	Mukerjee, Bhudeva, Babu, Inspector of Schools, <i>Chinsurah.</i>
1854 Oct. 11.	N.S.	Muir, Sir William, K. C. S. I., B. C. S. <i>Europe.</i>
1872 May 1.	N.R.	Mukerjee, Nirranjan, Babu. <i>Benares.</i>

Date of Election.		
1867 Mar. 6.	R.	Mukerjea, Pearimohan, Bábu, M. A., Pleader, High Court. <i>Uttarpara.</i>
1862 July 2.	N.S.	Napier of Magdala, Baron, General, G. C. S. I., G. C. B. <i>Europe.</i>
1876 May 4.	R.	Nash, A. M., M. A., Professor, Presidency College. <i>Calcutta.</i>
1871 Jan. 4.	N.S.	Newton, Isaac. <i>Europe.</i>
1869 July 7.	N.R.	Nursing Rao, A. V. <i>Vizagapatam.</i>
1871 July 5.	N.R.	Oates, E. W., C. E., Engineer. P. W. D., Garrison Div. Sittang Canal. <i>Rangoon, Pegu.</i>
1874 Oct. 4.	R.	O'Kinealy, The Hon'ble James, C. S., Offg. Secy. Govt. of India, Home Department. <i>Calcutta.</i>
1851 June 4.	N.S.	Oldham, Thomas, LL. D., F. R. S. <i>Eldon place, Rugby, England.</i>
1873 Aug. 6.	N.R.	Olpherts, W. J., C. E., Resident, Engr. E. I. Railway. <i>Benares.</i>
1864 Mar. 2.	R.	Palmer, Surgeon-Major William John, Professor of Anatomy, Medical College. <i>Calcutta.</i>
1873 Aug. 6.	R.	Parker, J. C., Custom House Agent, Custom House. <i>Calcutta.</i>
1876 June 7.	R.	Parry, Robert, Professor, Presidency College. <i>Calcutta.</i>
1862 May 7.	L.M.	Partridge, Samuel, M. D. Samuel Bowen, M. D. <i>Care of Messrs. Partridge & Co., No. 55, Parliament Street, London.</i>
1871 Dec. 6.	N.R.	Peal, S. E., Manager, Sapakati Tea Estate. <i>Sibsagar, Assam.</i>
1860 Feb. 1.	N.S.	Pearse, Lieut.-Col. G. G. <i>Europe.</i>
1868 Nov. 4.	N.R.	Pearson, C. E., M. A., Inspector of Schools, Rawul Pindi, Circle. <i>Rawul Pindi.</i>
1873 Aug. 6.	R.	Pedler, Alexander, Professor of Chemistry, Presidency College. <i>Calcutta.</i>
1864 Mar. 2.	R.	Pellew, Fleetwood Hugo, C. S., Magistrate and Collector. <i>Hoogly.</i>
1865 Sept. 6.	N.R.	Peppe, T. E. <i>Ranchi.</i>
1877 Aug. 1.	N.R.	Peters, C. T., M. B., Belgaum. <i>Bombay Presidency.</i>
1868 May 6.	N.R.	Peterson, F. W., Bombay Mint. <i>Bombay.</i>
1835 July 1.	F.M.	Phayre, Lieut.-G., Sir Arthur Purves, K. C. S. I., C. B. <i>Mauritius.</i>
1864 Nov. 2.	N.S.	Phear, Sir J. B. <i>Ceylon.</i>
1869 Feb. 3.	N.R.	Pickford, J., M. A. <i>Madras.</i>
1875 Feb. 3.	N.R.	Porter, W. J., Asst. Supdt. of Police. <i>Mergui.</i>
1872 Dec. 4.	R.	Prannáth Sarasvati, Pandit, M. A., B. L. <i>Bhowanipur.</i>
1874 Dec. 2.	N.R.	Protheroe, Capt. M., Deputy Supdt. <i>Port Blair.</i>
1877 May 2.	N.R.	Ravenshaw, Thomas Edw., C. S., Commissioner of Orissa Division. <i>Cuttack.</i>

Date of Election.		
1868 April 1.	N.R.	Rái, Pramathanáth Raja. <i>Digapati.</i>
1876 July 5.	R.	Raye, D. O'Connell, M. D., 1st Resd't Surgeon, Presidency General Hospital. <i>Calcutta.</i>
1877 Aug. 1.	N.R.	Rees, J. C., Asst. Engr. P. W. D., Thayetmo Division, <i>Prome. B. Burmah.</i>
1860 Mar. 7.	N.R.	Reid, Henry Stewart, c. s., Member, Board of Revenue, N. W. P. <i>Allahabad.</i>
1871 July 5.	N.S.	Reid, James Robert, c. s. <i>Europe.</i>
1872 April 3.	N.R.	Richards, Dr. Vincent. <i>Goalundo.</i>
1860 Jan. 3.	N.R.	Rivett-Carnac, John Henry, C.I.E., c.s., Opium Agent. <i>Ghazipur.</i>
1868 April 1.	R.	Robb, Gordon. <i>Calcutta.</i>
1863 April 1.	N.R.	Robertson, Charles, c. s., Secretary to the Govt. N. W. P. and Oude. <i>Allahabad.</i>
1865 Feb. 1.	R.	Robinson, S. H. <i>Calcutta.</i>
1876 Dec. 6.	N. S.	Rodon, Lieut. G. S., Royal Scots. <i>Europe.</i>
1870 Jan. 5.	N.R.	Ross, Major Alexander George, Staff Corps, 2nd in Comd., 1st Sikh Infy. <i>Dera Ghazi Khan.</i>
1871 Dec. 6.	F.M.	Ross, William Leycester, B. S. C. 24, <i>Coate's Garden, Edinburgh.</i>
1877 May 2.	N.R.	Sandford, W., Supdt. Office of Director of State Railways, Western System. <i>Rawal Pindee, Punjab.</i>
1872 Feb. 7.	N.R.	Sastri, Sashagiri M., B. A. <i>Madras.</i>
1870 May 4.	N.R.	Schlich, Dr. W. <i>Darjiling.</i>
1869 Feb. 3.	F.M.	Schwendler, L. <i>Care of Messrs. Ernsthausen, Oesterley, 21, Minory Lane, London.</i>
1876 July 5.	N.S.	Scott, Ross, c. s. <i>Europe.</i>
1874 July 1.	N.R.	Scully, Dr. John, Residency Surgeon, <i>Khatmandu.</i>
1874 Dec. 2.	N.R.	Sen, Rám Dás, Bábu. <i>Berhampur.</i>
1876 Feb. 2.	N.R.	Shaw, R. B., Political Agent. <i>Mandalay.</i>
1860 July 4.	N.R.	Shelverton, G. <i>Waltair, near Vizagapatam.</i>
1863 April 1.	N.R.	Showers, Major-G. Charles Lionel. <i>Amballa.</i>
1876 April 5.	R.	Sing, Kumara Kantichandra. <i>Calcutta.</i>
1869 Feb. 3.	N.R.	Singh, Giriprasád, Thákur., Biswan Fort. <i>Allighar.</i>
1853 Dec. 7.	N.R.	Singh, Isvariprasád, Bahádur, Rájá. <i>Benares.</i>
1859 Aug. 3.	R.	Sinha, Balaichánd, Bábu. <i>Calcutta.</i>
1877 Aug. 30.	N.R.	Singha, Pratápanaráyan, Deputy Magt. <i>Jehanabad.</i>
1867 April 3.	R.	Sirkár, Mahendralál, Dr. <i>Calcutta.</i>
1872 Aug. 7.	N.R.	Skrefsrud, Rev. L. O., India Home Mission to the Santhals. <i>Dumka, Santhal Purgannahs.</i>
1864 Sept. 7.	N.R.	Sladen, Lieut.-Col. E. B., M. S. C., Commissioner, Arracan Division. <i>Arracan.</i>
1875 Feb. 3.	N.S.	Smidt, John. <i>Europe.</i>
1865 July 5.	N.S.	Smith, David Boyes, M. D. <i>Europe.</i>
1874 June 3.	N.R.	Smith, Vincent Arthur, c. s., Asst. Settlement Officer. <i>Hamirpur, N. W. P.</i>
1864 Mar. 2.	N.R.	Spearman, Major Horace Ralph, Deputy Commissioner. <i>Rangoon, B. Burmah.</i>

Date of Election.		
1877 April 4.	N.R.	Spens, A. N. W., The Rev. Chaplain. <i>Sialkot.</i>
1872 July 3.	N.R.	Stephen, Carr, B. L., Judl. Asst. Commr. <i>Ludianah.</i>
1863 Sept. 2.	N.R.	Stewart, R. D., <i>Raniganj.</i>
1875 July 7.	N.S.	Stewart, M. G. <i>Europe.</i>
1876 Aug. 2.	N.R.	St. John, Major Oliver Beauchamp, R. E., Principal, Mayo College. <i>Ajmir.</i>
1861 Sept. 4.	R.	Stokes, The Hon'ble Whitley, C. S. I., C.I.E. <i>Calcutta.</i>
1869 Feb. 3.	R.	Strachey, The Hon'ble Sir J., K.C.S.I., C.I.E. <i>Calcutta.</i>
1859 Mar. 2.	N.R.	Stubbs, Lieut.-Col. Francis William, Royal Artillery. <i>Lucknow.</i>
1858 July 7.	N.R.	Sutherland, Henry Cobbe, M. A., B. C. S., Dist. and Sess. Judge. <i>Backergunge.</i>
1864 Aug. 11.	R.	Swinhoe, W., Attorney-at-Law. <i>Calcutta.</i>
1871 Mar. 1.	R.	Tagore, Dvijendranath, Bábu. <i>Calcutta.</i>
1871 Jan. 4.	R.	Tagore, Gunendranath, Bábu. <i>Calcutta.</i>
1868 June 3.	R.	Tagore, Jotendro Mohun, The Hon'ble Maharaja. <i>Calcutta.</i>
1865 Sept. 6.	R.	Tawney, C. H., M. A., Principal, Presidency College. <i>Calcutta.</i>
1865 April 5.		
1874 Mar. 4.	N.S.	Taylor, R., c. s. <i>Europe.</i>
	R.	Taylor, Commander A. D., late Indian Navy. <i>Calcutta.</i>
1860 May 2.	N.R.	Temple, The Hon. Sir R. Bart. K. C. S. I., C.I.E. B. C. S. <i>Bombay.</i>
1876 Feb. 2.	R.	Tennant, Col. James Francis, R. E., F. R. S. <i>Calcutta.</i>
1875 June 2.	N.R.	Thibaut, Dr. G., Prof. Sanskrit College. <i>Benares.</i>
1869 Oct. 6.	N.R.	Thomson, A., Inspector of Schools. <i>Ruizabad.</i>
1875 Nov. 3.	N.R.	Thomson, Robert George, c. s., Asst. Commr. <i>Karnal, Panjab.</i>
1847 June 2.	R.	Thuillier, Major-G., Henry Edward Landor, R. A., C. S. I., F. R. S. <i>Care of Messrs. Grindlay and Co., 55, Parliament St. London.</i>
1865 July 5.	N.S.	Tolbort, Thos. Wm. Hooper, c. s. <i>Europe.</i>
1871 April 5.	F.M.	Trefftz, Oscar. <i>Care of Messrs. E. D. Keilhorn and Co., 16, St. Mary Axe, London.</i>
1861 June 5.	L.M.	Tremlett, James Dyer, M. A., c. s., Depy. Commr. <i>Kangra.</i>
1872 July 3.	N.R.	Trevor, William Spottiswoode, Lieut.-Col., R. E., Offg. Chief Engr. and Secy. to the Chief Commr., B. Burmah. <i>Rangoon.</i>
1873 April 6.	R.	Turnbull, Robert, Secretary to the Corporation. <i>Calcutta.</i>
1863 May 6.	N.R.	Tyler, J. W., M. D. <i>Agra.</i>
1864 Feb. 3.	N.R.	Verchère, A. M., M. D. <i>Agra.</i>
1864 April 6.	N.R.	Vijayarâma Gujapati Raj Munniâ Sultan Bahâdur, Mahârâjah Mirza Vijayarâma. <i>Benares.</i>
1871 Feb. 1.	N.S.	Waagen, Dr. W., <i>Europe.</i>
1869 Aug. 4.	R.	Wâhid Ali, Prince Jahân Qadr Muhammad, Bahâdur. <i>Garden Reach.</i>

Date of Election.		
1865 Nov. 1.	R.	Waldie, David, F. G. S. <i>Calcutta</i> .
1861 May 1.	R.	Walker, Col. James T., C. B., R. E., F. R. S. <i>Calcutta</i> .
1875 April 7.	R.	Wall, Dr. Alfred John, B. Medical Service. <i>Calcutta</i> .
1863 Oct. 7.	R.	Waller, Walter Kerr, M. B. <i>Calcutta</i> .
1865 May 3.	R.	Waterhouse, Capt. James, B. S. C., Asst. Surveyor General. <i>Calcutta</i> .
1874 July 1.	R.	Watt, Dr. George, Professor, Hughli College. <i>Chinsurah</i> .
1876 Dec. 6.	N.R.	Webb, W. T., M. A., Prof. Dacca College. <i>Dacca</i> .
1869 Sept. 1.	R.	Westland, James, C. S. <i>Calcutta</i> .
1867 Feb. 6.	N.S.	Westmacott, Edward Vesey, B. A., C. S. <i>Europe</i> .
1862 Oct. 8.	R.	Wheeler, James Talboys. <i>Calcutta</i> .
1873 April 2.	N.R.	White, Edmond, C. S., Offg. Joint Magistrate and Collector. <i>Allahabad</i> .
1875 Feb. 3.	N.R.	Whiteway, Richard Stephen, C. S., Asst. Settlement Officer. <i>Muttra</i> .
1877 April 4.	N.R.	Whitty, Irvine John, Supdt., Khurhurbari Collieries. <i>Giridhi, E. I. Railway</i> .
1867 Aug. 7.	N.R.	Wilcox, F., Dist. Supdt. of Police. <i>Purulia, Manbhum</i> .
1873 May 7.	N.R.	Williams, George Robert Carlisle, B. A., C. S., Offg. Joint Mag. and Collr. in charge of Ballia.
1867 Jan. 16.	N.R.	Williamson, Capt. William John, Offg. Insp. Genl. of Police and Supdt. of Stamps. <i>Garo Hills, Assam</i> .
1876 April 5.	R.	Wilson, Alexander. <i>Calcutta</i> .
1870 Aug. 3.	N.R.	Wilson, Robert Henry, B. A., C. S., Mag. and Collr. <i>Midnapore</i> .
1866 Mar. 7.	L.M.	Wise, Dr. J. F. N. <i>Rostellan, County Cork, Ireland</i> .
1867 July 3.	N.R.	Wood, Dr. Julius John, Supdt. of Vaccination. <i>Ranchi</i> .
1874 Mar. 4.	N.S.	Wood, C. H. <i>Europe</i> .
1870 Jan. 5.	F.M.	Wood-Mason, James. <i>Care of Messrs. King and Co., 65, Cornhill, London</i> .
1873 Aug. 6.	N.R.	Woodthorpe, Lieut. Robert Gosset, R. E., Asst. Supdt., Khási and Gáo Hills Survey. <i>Shillong</i> .

HONORARY MEMBERS.

1825 Mar.	9	M. Garcin de Tassy, Memb. de l'Institut.	<i>Paris.</i>
1821 "	6	Sir John Phillippart.	<i>London.</i>
1826 July	1.	Count de Noe.	<i>Paris.</i>
1835 May	6.	Professor Isaac Lea.	<i>Philadelphia.</i>
1847 Sept.	1.	Col. W. Munro.	<i>London.</i>
1847 Nov.	3.	His Highness the Nawab Nazim of Bengal.	<i>Murshidabad.</i>
1848 Feb.	2.	Dr. J. D. Hooker, R. N., F. R. S.	<i>Kew.</i>
1848 Mar.	8.	Professor Henry.	<i>Princeton, U. S.</i>
1853 April	6.	Major-Gen. Sir H. C. Rawlinson, K. C. B.	<i>London.</i>
1858 July	6.	B. H. Hodgson.	<i>Europe.</i>
1859 Mar.	2.	The Hon'ble Sir J. W. Colville, Kt.	<i>Europe.</i>
1860 "	7.	Professor Max Müller.	<i>Oxford.</i>
1860 Nov.	7.	Monsieur Stanislas Julien.	<i>Paris.</i>
1860 "	7.	Edward Thomas.	<i>London.</i>
1860 "	7.	Dr. Aloys Sprenger.	<i>Bern.</i>
1860 "	7.	Dr. Albrecht Weber.	<i>Berlin.</i>
1868 Feb.	5.	General A. Cunningham, C. S. I.	<i>India.</i>
1868 "	5.	Professor Bāpu Dēva Sāstri.	<i>Benares.</i>
1868 "	5.	Dr. T. Thomson.	<i>London.</i>
1868 "	2.	A. Grote.	<i>London.</i>
1871 "	7.	Charles Darwin.	<i>London.</i>
1872 "	1.	Sir G. B. Airy.	<i>London.</i>
1872 June	5.	Professor T. H. Huxley.	<i>London.</i>
1875 Nov.	3.	Dr. O. B. ...	
1875 "	3.	Professor J. O. Westwood.	<i>Oxford.</i>
1876 April	5.	Yule, Col. H., R. E., C. B.	<i>London.</i>
1876 "	5.	Siemens, Dr. Werner.	<i>Berlin.</i>
1877 Jan.	17.	Dr. John Muir.	<i>Edinburgh.</i>

CORRESPONDING MEMBERS.

1844 Oct.	2.	Maegowan, Dr. J.	<i>Europe.</i>
1856 June	4.	Krämer, Herr A. von.	<i>Alexandria.</i>
1856 "	3.	Porter, Rev. J.	<i>Damascus.</i>
1856 "	4.	Schlagintweit, Herr H. von.	<i>Munich.</i>
1856 "	4.	Smith, Dr. E.	<i>Beirut.</i>
1859 "	4.	Taylor, J., Esq.	<i>Bussorah.</i>
1857 Mar.	4.	Nietner, J., Esq.	<i>Ceylon.</i>
1858 "	3.	Schlagintweit, Herr R. von.	<i>Giessen.</i>
1859 Nov.	2.	Frederick, Dr. H.	<i>Batavia.</i>
1859 May	4.	Bleeker, Dr. H.	<i>Europe.</i>
1860 Feb.	1.	Baker, The Rev. H.	<i>E. Malabar.</i>
1861 July	3.	Gösche, Dr. R.	
1862 Mar.	5.	Murray, A., Esq.	<i>London.</i>
1863 July	4.	Barnes, R. H., Esq.	<i>Ceylon.</i>
1866 May	7.	Schlagintweit, Prof. E. von.	<i>Munich.</i>
1866 "	7.	Sherring, Rev. M. A.	<i>Benares.</i>
1868 "	5.	Holmböe, Prof.	<i>Christiania.</i>

ASSOCIATE MEMBERS.

1865 May	3.	Dall, Rev. C. H.	<i>Calcutta.</i>
1874 Feb.	4.	Schaumburgh, J., Esq.	<i>Calcutta.</i>
1874 April	1.	Lafont, Rev. F. E., s. j.	<i>Calcutta.</i>
1875 Dec.	1.	Bate, Rev. J. D.	<i>Allahabad.</i>
1875 „	1.	Maulawí Abdul Hai, Madrasah.	<i>Calcutta.</i>

LIST OF MEMBERS WHO HAVE BEEN ABSENT FROM INDIA THREE YEARS AND UPWARDS.*

**Rule 40.*—After the lapse of 3 years from the date of a Member leaving India, if no intimation of his wishes shall in the interval have been received by the Society, his name shall be removed from the list of Members.

The following Members will be removed from the next Member List of the Society under the operation of the above Rule.

Lt.-Col. A. S. Allan,	1874.
G. W. W. Barclay,	1875.
Sir G. Campbell,	1874.
Sir W. Elliott,	
Sir J. Fayrer,	1873.
Sir T. D. Forsyth,	1875.
Col. J. C. Haughton,	1874.
H. Leonard,	1874.
Dr. C. Macnamara,	1874.
Lt.-Col. G. G. Pearse,	1873.
Dr. W. Waagen,	1875.

LOSS OF MEMBERS DURING 1876.

By RETIREMENT.

Babu Bhagabaticharan Mallik.	<i>Calcutta.</i>
W. D. Bruce, Esq.	<i>Calcutta.</i>
T. E. Coxhead, Esq.	<i>Tiperah.</i>
The Rev. C. H. Chard.	<i>Thayetmyo, B. Burmah.</i>
F. C. Daukes, Esq.	<i>Calcutta.</i>
Capt. T. Deane.	<i>Calcutta.</i>
Col. H. Drummond.	<i>Calcutta.</i>
C. B. P. Gordon.	<i>Calcutta.</i>
A. J. Hughes, Esq.	<i>Barrackpur.</i>
Major Lord R. Kerr.	<i>Calcutta.</i>
Dr. J. F. McConnell.	<i>Calcutta.</i>

Manickjee P. Esq. *Calcutta.*
G. Nevill, Esq.
S. Pell, Esq. *Calcutta.*
F. Schlegel, Esq. *Calcutta.*
D. Scott, Esq. *Cuttack.*
Lt.-Col. A. D. Vanrenen. *Calcutta.*

BY DEATH.

Ordinary Members.

J. Geoghegan, Esq. *Europe.*
Raja Grishchandra Sing. *Calcutta.*
The Hon'ble Maharaja Ramanatha Tagore. *Calcutta.*
Col. D. G. Robinson. *Bombay.*
Babu Vrindabanchandra Mandala. *Balasor.*

Corresponding Member.

Swinhoe, R. *China.*

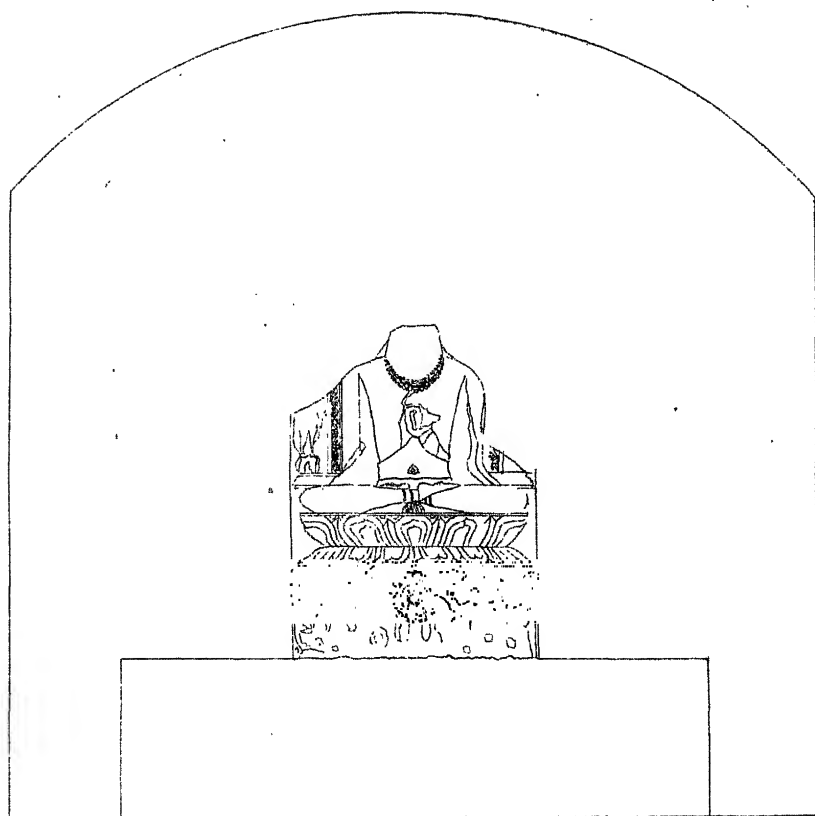
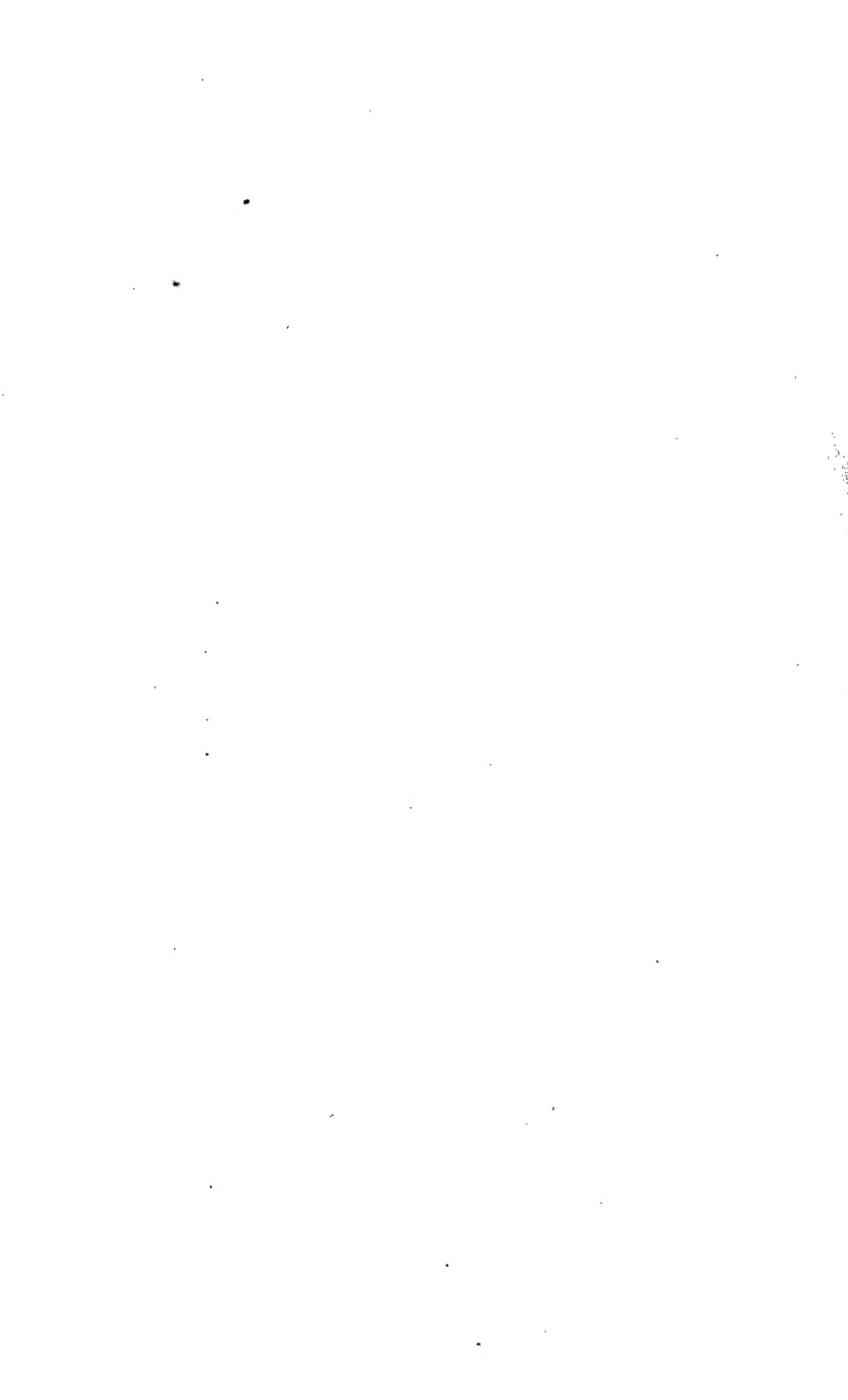


FIGURE OF BUDDHA FOUND AT SARNATH.

Scale $\frac{1}{2}$ Inch = 1 Foot.



Zincographed at the Surveyor General's Office Calcutta.



PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL.

FOR JANUARY, 1878.

The Monthly General Meeting of the Asiatic Society was held on Wednesday, the 2nd instant, at 9 o'clock P. M.

DR. RÁJENDRALÁLA MITRA, RAI BAHÁDUR, C. I. E., Vice-President, in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced :—

1. From Signor O. Beccari, a copy of his work entitled—

“Malesia; Raccolta di Osservazioni Botaniche intorno alle piante dell' Archipelago Indo-Malese e Papuano.”—Vol. I. fas. 2.

2. From the Right Hon'ble the Secretary of State for India, through the Military Department, Government of India, the following books published by the Hakluyt Society :—

Barent's three Voyages to the Arctic Regions. The Commentaries of the Great Afonso D'Albuquerque, by W. de Gray Birch. Vol. 2.

3. From the Government of India, copies of the following works by H. F. Blanford, Esq., Meteorological Reporter to the Government of India.

The Indian Meteorologist's Vade-Mecum, Pts. I, II. Tables for the reduction of Meteorological Observations in India.

The following gentlemen, duly proposed and seconded at the last Meeting, were elected Ordinary Members—

Lieutenant H. A. Sawyer, B. S. C.

Alexander Ward, Esq.

The following are candidates for ballot at the next Meeting—

Col. the Hon'ble Sir Andrew Clarke, R. E., K. C. M. G., C. B., proposed by Major-General H. L. Thuillier, C. S. I., seconded by Dr. Rájendralála Mitra.

The Hon'ble H. T. Prinsep, C. S., Calcutta, proposed by H. F. Blandford, Esq., seconded by H. H. Locke, Esq.

The Rev. C. A. Chard and Manockjee Rustomjee, Esq. have intimated their desire to withdraw from the Society.

The CHAIRMAN reported that the Council had transferred Rs. 1,26,700 to the Permanent Reserve Fund under Rule 67. This sum includes Rs. 2000 from Admission and Compounding Fees, funded before the receipt of the Rs. 1,50,000 from Government, and Rs. 2,782-13-7 since received on the same account. Of the sum forming the Permanent Reserve Fund Rs. 10,700 would be in 4 and $4\frac{1}{2}$ per cent., and the remainder in $5\frac{1}{2}$ per cent., as shewn in the accompanying list:—

$4\frac{1}{2}$ per cent.,	Nos. 046,454/011, 1830/1872,.....	Rs. 1,200
$4\frac{1}{2}$ „	„ 046,478/022, 559 „	4,500
4 „	„ 4537/7/4—077,963 1865,	500
4 „	„ 4538/ „ —077964 „	500
4 „	„ 4539/ „ —077965 „	500
4 „	„ 4540/7/4—077966/ „	500
4 „	„ 4541/ „ —077967 „	500
4 „	„ 4542/ „ —077968 „	500
4 „	„ 4553/ „ —078468 „	1,000
4 „	„ $\frac{043995}{8005}$ of 1859/60,.....	1,000
$5\frac{1}{2}$ „	„ 8269, 003890/002922 of 1859/60	10,000
$5\frac{1}{2}$ „	„ 8272, 043655 of 1859/60,	6,000
$5\frac{1}{2}$ „	„ 8273, 043654 of 1859/40,	10,000
$5\frac{1}{2}$ „	„ 8274, 043653 „	10,000
$5\frac{1}{2}$ „	„ 8275, 043652 „	10,000
$5\frac{1}{2}$ „	„ 8276, 043651 „	10,000
$5\frac{1}{2}$ „	„ 8282, 040385/007484	10,000
$5\frac{1}{2}$ „	„ 8283, 040384 „	10,000
$5\frac{1}{2}$ „	„ 8285, 040376 „	10,000
$5\frac{1}{2}$ „	„ 8286, 040375 „	10,000
$5\frac{1}{2}$ „	„ 8287, 038223/035082,,	10,000
$5\frac{1}{2}$ „	„ 8288, 029129/006278,,	10,000

Rs. 1,26,700

Rs. 9,300 will thus be left funded in the Temporary Reserve Fund.

The CHAIRMAN also reported that the Council had appointed Mr. R. Lydekker, Member of the Council and Natural History Secretary in the place of Mr. Wood-Mason.

The Chair was then taken by the President, the Hon. SIR E. C. BAYLEY, K. C. S. I., C. I. E.

Mr. W. T. BLANFORD exhibited the Geological map of Sind recently completed, and gave the following account of the Geology of the Province, which had been mapped in the course of the last three years by Mr. Fedden and himself.

The greater portion of Sind, including all the richer and more populous parts of the province, consists of the alluvial flat of the Indus, and is a portion of the great Indo-Gangetic plain of northern India. But to the west of the river, at a variable distance, barren rocky hills arise, in upper Sind consisting chiefly of a great north and south range, known as the Khirthar, which separates Sind from the Kelat territory, (or Balúchistán,) and in lower Sind, south of Sehván, of several minor ranges, having a general north and south direction. All these ranges, if of any height, consist chiefly of nummulitic limestone, and the ridges in Lower Sind are for the most part anticlinal rolls, higher beds occupying the intervening valleys. The Geology of the province is singularly simple, faults being rare, whilst the disturbance of the rocks is just sufficient to afford good sections, without rendering the relations of the beds so complicated as to be difficult to trace.

Until recently the Geology was chiefly known from the researches of Captain Vicary published no less than thirty years ago,* and these researches were limited to a very small portion of the province. The fossils collected by Captain Vicary and others were described and elaborately figured by MM. d'Archiac and Haime† in 1853, the whole of the marine fauna being supposed to be eocene. It was however subsequently shewn by Professor Martin Duncan‡ and by Mr. Jenkins§ that there was a mixture of later tertiary forms amongst the supposed eocene fossils, and it was noticed by Captain Vicary that above the marine beds were conglomerates and sandstones containing fossil bones.

Such was, in brief, the information available when the Survey was commenced, and the result of a more thorough investigation has naturally added much without depriving the earlier information of its value. Indeed the beautiful figures of d'Archiac and Haime's work have been of the greatest service in the field, by enabling us at once to identify many of the fossils found. The results of the first year's work have been briefly described on the Records of the Geological Survey,|| but much additional

* Quart. Journ. Geol. Soc., III, p. 334.

† Description des Animaux fossiles du groupe nummulitique de l'Inde.

‡ Ann. Mag. Nat. Hist. 3, XIII, p. 295.

§ Quart. Journ. Geol. Soc., XX, p. 45.

|| Vol. IX., p. 8.

information has since been added, the most important being the recognition of cretaceous beds at the base of the tertiaries, and the confirmation of the view before announced that a thin flow of basalt representing the Deccan traps underlies the tertiary rocks. The beds of Sind are now classified thus in descending order.

<i>Name.</i>	<i>Subdivisions.</i>	<i>Approximate thickness.</i>	<i>Supposed geological age.</i>	<i>Remarks.</i>
1. Alluvial &c.,	—	unknown	recent and post tertiary	—
2. Manchhar	{ upper —	5000	pliocene	apparently representative of the Sevaliks proper.
	{ lower —	3000 to 5000	lower pliocene or upper miocene	
3. Gáj	—	1000 to 1500	miocene	—
4. Nari	{ upper	4000 to 6000	lower miocene?	—
	{ lower	100 to 1500	upper eocene	—
5. Khirthar	{ upper	500 to 3000	eocene	Nummulitic limestone. The base not determined.
	{ lower	10,000 ?	do.	
6. Ranikot	—	2000	lower eocene	—
7. Traps	—	40 to 90	upper cretaceous	Representative of Deccan and Malwa trap
8. Cretaceous	{ <i>Cardita</i>	350 to 450	} cretaceous	base not exposed.
	{ <i>Beaumonti</i> beds			
	Sandstones	700		
	Hippuritic limestone	320		

The finest sections are exposed in the Khirthar range in Upper Sind, and from this range the name applied to the nummulitic limestone, which always forms the highest part of the hills, has been taken. On the eastern flank of the range, the Nari, Gáj, and Manchhar beds are seen successively dipping towards the Indus plain, whilst west of the range, in Kelat, lower beds come in, but these have hitherto only been examined very hurriedly in one spot, on the Gáj river, which traverses the main range by an impassable gorge. Some 10,000 feet of these lower beds are exposed, no base being seen, but nummulitic and other fossils were only found in the higher beds, the lower 5000 or 6000 feet being unfossiliferous.

The only other place in Sind where beds inferior to the nummulitic limestone were found to be exposed is in the nameless range of hills running south from Sehván. This range is sometimes spoken of as the Laki range, from the village of Laki, near the northern extremity. It appears to be part of the Hála range of Vicary and others, but the Hála range of the old maps included the Khirthar and several other ranges, and no distinct chain of hills is known by any such name in the country. There is however an unimportant pass in the Laki range known as Hála Lak (Lak = pass). Each separate peak of this range has its own name, no general term being applied to the whole. In this Laki range, however, beneath the nummulitic limestone, the lower eocene and cretaceous beds just noticed are well exposed.

In the south-western portion of the province the well-marked breaks between the different subdivisions of the tertiary series can no longer be traced. The massive nummulitic limestone, so conspicuous to the northward, becomes broken up into thinner beds intercalated with clays and sands, and finally disappears, and the higher tertiary groups all tend to pass into each other.

The lowest bed seen in the province, the Hippuritic Limestone, has only been found in one spot, and there the outcrop does not occupy much more than about half a mile in length. The only recognizable fossil found was a Hippurite. It is probable that this limestone is identical with the cretaceous limestone, which occupies a large area in Persia, and which has been traced at intervals from south-east of Karmán to the neighbourhood of Tehrán. If so, this is the first time that the formation has been recognized in India, except in the Himalayas. The bed consists of pale-coloured hard limestone, very gritty and sandy above, purer beneath.

Above the limestone there is a considerable thickness of dark-coloured sandstones, often of a purplish tint and frequently rather calcareous. These beds are not very fossiliferous, but towards the top they contain oysters and a few bones, apparently reptilian.

The next beds in ascending order consist of olive clays, shales and sandstone, frequently abounding in fossils, the most important being a peculiarly globose *Cardita*, *C. Beaumonti*, two or three species of *Nautili* and corals. The *Cardita* is allied to cretaceous species, and so is one, at least, of the *Nautili*.

The thin band of basaltic trap resting upon the *Cardita Beaumonti* clays, although less than 100 feet thick, is almost certainly identical with the great Deccan and Malwa trap formation, which covers so enormous an area in Western India, and which extends from Western Chutia Nágpur as far as Kachh. The belt in Sind has been traced for about 22 miles, always occupying the same position above the olive clays and beneath the

lowest tertiary beds. This trap is therefore clearly contemporaneous and not intrusive, and its geological position at the base of the very lowest eocene rocks, and immediately above cretaceous strata, corresponds exactly with the place in the series already assigned to the formation where far more fully developed in Málwa and Guzerat.

The Ránikot group consists of variegated sandstones and shales, with some bands of highly fossiliferous brown limestone in the upper strata. In the lower portion of the group only imperfect plant remains are found, a few dicotyledonous leaves being the only recognizable impressions, but the limestone abounds in *Mollusca*, *Echinodermata*, and *Foraminifera*. Nummulites are much less common than in the next group, the only abundant species being *N. Leymeriei*, but this, like several other Ránikot fossils, is found in the Khirthar beds also. A few forms with cretaceous affinities, *e. g.* a *Salenia* and some peculiar *Nautili* occur in the brown limestones, but the great majority of the species are eocene.

The beds hitherto noticed are confined to lower Sind, all except the Ránikot group being restricted to the Laki range, whilst the latter covers a considerable tract of country near Kotri and Tatta. The Ránikot beds in this part of the country are succeeded immediately in ascending order by the Khirthar Nummulitic limestone, which is locally unconformable, but generally appears to pass down into the underlying group. To the west of the Khirthar range however, on the Upper Gáj, as already mentioned, a succession of argillaceous limestones, shales and sandstones, resting upon unfossiliferous dark shales with limestone bands, is found, and the latter beds appear to be identical with the supposed nummulitic group, which occupies so large an area in Makrán, and which I once traversed throughout the greater part of the country between Gwádar and Jálk. This same lower Khirthar group, with its characteristic unfossiliferous shales and bands of limestone, is also found on the Habb river, west of lower Sind.

The nummulitic limestone of the Khirthar group is about 1200 feet thick at the Gáj, but apparently thicker to the northward, whilst in lower Sind it gradually thins out, becomes mixed with shales and clays, and towards the Habb river entirely disappears. Where best developed the Khirthar group is by far the most conspicuous formation in the province, and consists of very massive whitish and grey limestone, abounding in nummulites of several kinds and other foraminifera, corals and mollusca also occurring. The commonest species are *Nummulites granulosa*, *N. Biaritzensis*, *N. Leymeriei*, *N. spira*, *N. Ramondi*, *N. obtusa*, *Alveolina ovoidea*, *Orbitoides dispansus*, and *Nerita Schmedeliana*. The nummulitic limestone not only forms the crest of the Khirthar, but it is the most conspicuous rock in many of the minor ranges, and fragments derived from it are found in most of the recent and sub-recent gravels.

Above the white or grey nummulitic limestone, there are generally found some bands of brown limestone, also containing *Nummulites* and *Orbitoides*, but of different species, none of the forms so common in the Khirthar beds being found, but being replaced by an abundance of *Nummulites Garansensis*, *N. sublævigata* and *Orbitoides papyracea*. The latter is very characteristic, being very thin and often of large size, a diameter of two to three inches being not uncommon. *Nummulites sublævigata* is unknown in Europe. *N. Garansensis* there, as in Sind, belongs to the highest beds containing nummulites, and extends into the formations of the lower miocene period. With the brown limestones dark shales are associated, and these gradually pass up into a great thickness of unfossiliferous sandstones, forming the upper Nari group.

In the Khirthar range there is a sharp change from the Nari sandstones to the limestones of the Gáj group, but further south the passage is more gradual, bands of limestone with marine fossils being found here and there in the upper Nari beds. The Gáj group is highly fossiliferous, but no nummulites have been detected in it: an *Orbitoides*, apparently *O. papyracea*, is however found. Corals, echinoderms and mollusca abound in places and are exquisitely preserved; the most typical fossils are *Ostrea multicostata* and *Breynia carinata*, but *Olypeaster*, *Echinodiscus*, *Echinolampas Jacquemontii*, *Kuphus rectus*, *Venus granosa*, *Pecten Favrei*, *Turritella angulata* and *Balanus sublævis* are all common.

The highest tertiary group, to which the name of Manchhar has been given, is of immense thickness, in places approaching 10,000 feet from top to bottom. The lower subdivision consists of grey sandstones, with brown, grey and red clays, and a few conglomeratic beds containing fragmentary mammalian bones; the upper portion is chiefly composed of clays with subordinate beds of sandstone (though there is much variation in the relative development of argillaceous and sandy beds) and some conglomerates containing pebbles of nummulitic limestone, which have not been observed in the lower portion of the group. Capping the whole is a considerable thickness of coarse conglomerate. Bones are of very rare occurrence in the upper portion of the group. As a whole this important formation probably represents the Sevaliks of northern India, and some of the mammalia, identified by Mr. Lydekker, appear identical, but the genera represented are as a rule older, forms like *Dinotherium* and *Merycopotamus* prevailing and the only common living genus being *Rhinoceros*. This appearance of greater age is doubtless due to the lower horizon at which the fossils occur in Sind, where the ossiferous beds are near the base of the whole group, close to the miocene Gáj beds, into which there is a complete passage from the lower Manchhars, the passage beds containing estuarine mollusca, whilst in the typical Sivalik area the fossiliferous beds are near the top of the series.

The whole of the beds hitherto described have been disturbed and upheaved, shewing that great changes in the surface of the country, and in all probability in the distribution of land and water, have taken place since the close of the Tertiary period in Sind, as in the Himalayas.

Mr. LYDEKKER remarked that the investigation of the Sind Sivalik rocks was gradually bringing to light the remains of a very interesting mammalian fauna which once inhabited that area. The most interesting among these mammals, were a number of Pig-like animals,—some with complex and others with simple teeth,—which mostly belonged to a group which had now completely disappeared from the earth. Some of these animals belonged to genera which had been previously known from the eocene and miocene of Europe and America, while others belonged to new genera, which would subsequently be described by the speaker in the "*Palæontologia Indica*."

Dr. RĀJENDRALĀLA MITRA submitted the following remarks on the early life of Aśoka. He said—Of all the ancient Indian monarchs whose monuments have come down to us, the Emperor Aśoka was the greatest. His sway extended from Kapurdegiri in the Eusafzai country to Dhauli in Cuttack, and from north Tihút to the Peninsula of Guzerat. His anxiety for the good of his subjects was great, and his edicts show the intelligent interest he took in their welfare. He was, however, the least known by the people in the present day. As a renegade from the religion of his ancestors he was detested by the Hindus, and nowhere noticed in their ancient records; and the Buddhists, whose ranks he joined, having been expelled the country, could not keep his name alive in India. To the Hon'ble Mr. Turnour of Ceylon belongs the credit of first bringing his name to the notice of European Orientalists; and the identification by our James Prinsep of the name with the Piyadasi of the Lāt inscriptions, laid the groundwork of the historical chronology of ancient India. Next to the identification, made by the founder of this Society, of Chandragupta with the Sandrocottus of the Greeks, it was of the highest importance. The next important event in connexion with the history of Aśoka was the discovery of the Sanskrit Buddhist Literature of Nepal. For it too are European scholars indebted to one of our most distinguished associates—distinguished alike for his literary and scientific researches—who first unlocked the storehouse of Nepalese Buddhism. Mr. B. H. Hodgson, to whom the speaker referred, collected three sets of MSS. of this literature, one of which he presented to this Society, another to the Royal Asiatic Society of Great Britain, and the third to the Asiatic Society of Paris. The first of these remains yet untouched; the second has the benefit of only a nominal catalogue; but the third fell into the hands of that profound scholar,

Eugène Burnouf, who drew from it the materials of his invaluable *Histoire du Bouddhisme Indien*. In that work the learned savant notices three MSS. bearing on the life of Asoka. One of them is named *Avadāna Sataka*, but of it he gives no analysis. According to its name it should contain a hundred legends, but the MS. of it in the Society's Library comprises only ninety tales; and these do not refer to the history of Asoka. The second work is the *Divya Avadāna*. It is a prose work, devoted entirely to the life of Asoka, and Burnouf has supplied a complete translation of it; but the Library of the Society does not possess a MS. of it. The last is the *Asoka Avadāna*, and of it the following is a brief abstract. It extends to 276 folia, and comprises about ten thousand anushtup verses. Its author's name is not given; but it professes to have been related by one Jayaśrī to his disciples at the Kukkūṭa Vihāra, in a garden named Upakaṇṭhikārāma, on the right bank of the Ganges near Pāṭaliputra. The authority quoted is that of a saint named Upa Gupta, the spiritual guide of the king. The first hundred and five folia of the work are devoted to the life of Asoka, and the rest is made up of tales and anecdotes said to have been related by the saint for the edification of his royal pupil, and to illustrate the morality of the Bauddha religion.

The work opens with the genealogy of Asoka from Bimbisāra, king of Rājagriha, who was a contemporary of Sakya. The lineal descendants of Bimbisāra were—

- | | |
|---------------|-----------------|
| 2. Mahipāla. | 7. Turakuri. |
| 3. Udayis'a. | 8. Mahāmaṇḍala. |
| 4. Muṇḍa. | 9. Prasenajit. |
| 5. Kākavarṇī. | 10. Nanda. |
| 6. Sahali. | 11. Vindus'ara. |

These names occur in the life of Asoka given in the *Divya Avadāna*, except the 2nd, 3rd, 4th and 7th, which have been differently given, Ajātasattu appearing for Mahipāla, Udayin for Udayis'a, Muiyān or Udayibhava, for Muṇḍa, and Tulakuchi for Turakuri or Turakuvi. In the absence of necessary MSS. it is impossible to ascertain how far these differences are due to copyist's errors. Apparently they are. The lists given in the Pāli annals and in the Vishṇu Purāṇa are more seriously discrepant. They stand thus:—

Vishṇu Purāṇa, Vol. IV, pp. 180-186.

1. S'isunāga.
2. Kākavarṇa.
3. Kshemadharman.
4. Kshattraiyas.
5. Vidmisāra, or Bimbisāra.
6. Ajātasattu.

Mahāvamsa, pp. 15-20.

1. Ajātasattu.
2. Udayibhaddhako.
3. Anuruddhako.
4. Muṇḍo.
5. Nāgadasako.
6. Susunāgo.

- | | |
|-----------------------------------|---|
| 7. Darbhaka. | 7. Kálāsoko. |
| 8. Udayásva. | 8. Ten sons of the last, no name given. |
| 9. Nandivardhana. | 9. Chandagutto. |
| 10. Mahánandi. | 10. Bindusáro. |
| 11. Sumálya &c., the nine Nandas. | |
| 12. Chandragupta. | |
| 13. Vindusára. | |

The other Purāṇas give many different versions of the names above noted, (see Mr. Hall's Notes in *loco cit.*). The Pāli names are obviously not so authentic as the Buddhist ones from Nepāl. The latter were very early translated into the Chinese, and have therefore better claim to confidence. At the same time it should be observed that the omission of the name of Chandragupta from the latter is significant. Coupled with the fact mentioned by the Nepalese writer that Vindusára came to Pátaliputra from Rājagriha, it suggests the idea that Chundragupta was the sole king of his race, and that the Mauriya line commenced and ended with him. The Pāli annals make Vindusára the son of Chandragupta. If so, he could not have come from Rājagriha to take possession of his ancestral capital of Pátaliputra. This is, however, not the place to enter into a discussion on the subject.

According to the work under notice, Vindusára of Rājagriha became the king of Pátaliputra, and his eldest son was Susíma. When Vindusára was reigning at Pátaliputra, a Bráhmaṇ of Chámpápuri presented him a daughter named Subhadráṅgi. The damsel was extraordinarily beautiful, and, a soothsayer having foretold that she would be the wife of a great king and mother of a universal monarch, the father made the present with a view to help the prophecy. The immediate fruit of this presentation did not, however, prove satisfactory to Subhadráṅgi. Immured in the palace, she was, through the jealousy of the princesses of the zenana, doomed to menial service. Among other low occupations she was ordered to acquire the art of a barber, whereby, she was told, she would gain the goodwill of the king. When well proficient in the art, she was ordered by the princesses to go and shave the king. She did so, and acquitted herself so well that the king offered to grant her any boon she wished. She prayed for his society; but the king denounced her on account of her being of the low caste of a barber. She explained that she was only acting the part of a barber by order of the princesses of the palace, but that she was a Bráhmaṇí by birth, and had been presented to the king expressly with a view to his marrying her. The king, thus reminded of her history, granted her wish, and made her the chief queen of the palace. Aśoka was the first fruit of this union. He was so named because the mother emancipated herself from her sufferings by his birth, the word meaning "griefless." The lady had a second son named Vítasoka or Vigatásoka, which word has a similar

meaning. Āśoka was uncomely in his person, and that was the cause of his not winning the affection of his father. His conduct too was repulsive. He was so very unruly and troublesome, that he got the nick-name of *Chanda* or 'the violent.' His father made him over for training to an astrologer, named Pingalavatsa, who foretold, after casting various kinds of lots, that the boy would succeed his father on the throne of Pāṭaliputra.

When the prince had attained his majority, his character did not mend; he was found so troublesome, that it was deemed advisable to get rid of him by deputing him to quell a mutiny which had broken out at Takshaśilā, at a great distance from the seat of the empire. His efforts, seconded, according to the text, by a divine declaration resounding in the air and certain celestial arms dropped therefrom for his use, proved successful, and he was well received by the people of that place. In the meantime his elder brother Susīma created disturbances at Pāṭaliputra, and offended the chief minister, through whose intrigue he too was sent to Takshaśilā, and Āśoka was recalled therefrom.

Soon after, the king fell ill, appointed Āśoka, through the instigation of the minister but much against his own will, regent during the absence of his eldest son Susīma, and died. Āśoka was immediately after anointed and placed on the throne. Susīma, on his return, disappointed of his patrimony, rose against his younger brother, and attacked Pāṭaliputra; but Āśoka, through his able minister Rādha Gupta, overpowered him, and, to prevent future disturbances, ordered his ministers "to lop off the heads of all the trees in the royal garden with their flowers and fruits," in the same sense in which Tarquin the Proud lopped off the heads of the "tallest poppies" in his garden, to instruct his son as to what he should do. The ministers demurred, and so he himself struck off their heads, and, retiring to a garden with the ladies of the palace, enjoyed for a time the pleasures of life to the utmost.

Noticing one day that some of the ladies had broken the branches of an Āśoka tree, (*Jonesia Asoka*) he was very much annoyed, and directed a wicked man named Chandaḡirika, "the fierce mountaineer," to burn them to ashes on a large fire, and this was immediately done. The mountaineer, however, soon after met his deserts. Sārthavāha, a rich merchant, had proceeded to sea in the company of a hundred other merchants, and there had a son born unto him, who was named Samudra. On his way home, after twelve years, falling into the hands of pirates, he was deprived of his effects, and murdered along with all his companions. His son Samudra alone escaped, and led the life of a Buddhist beggar. Once he came to the house of the mountaineer to beg alms, and was set upon, but could not by any means be murdered. Surprised at it, the mountaineer reported the circumstance to Āśoka. The king came to see the strange beggar, heard everything from him, and then cut off the head of the mountaineer.

The miracle wrought by the beggar worked on the mind of the king; and he became attached to the religion of Buddha. By the advice of a Yati named Yaśas, he caused a chaitya to be erected at the Kukkuṭa garden, and deposited in it some relics of Buddha. He then caused a chaitya and other religious edifices to be erected at Ramagrāma. Coming thence to the river Ganges, he was requested by the Nagas to go to their country, and there he caused religious edifices to be erected. At the request of the people of Takshāśilā, he caused 3,510,000,000 stupas to be erected for the deposit of relics. By his order the Yakshas erected, on the shores of the sea, ten million stupas for the same purpose. These religious acts endeared him to the people, who dropped the use of the old nick-name of Chanḍa, and called him Dharmāsoka or "Aśoka the virtuous."

After this a son was born unto him named Kunāla *alias* Dharmavardhana, who soon distinguished himself in all that was taught him, and was carefully brought up as a follower of the Buddhist religion.

Subsequently, on one occasion Aśoka went to a Yati, at the Kukkuṭa garden, to study the true religion, and, at the suggestion of that recluse, sent for, from the Urumuṇḍa Hill, a Yati named Upa Gupta, to whom he assigned the monastery of Veṇuvana, or the "Bamboo Grove." This saint was the son of one Gupta, a rich man of Mathurā, who had been converted by one Śoṇavāsī, a mendicant who resided on the Urumuṇḍa Hill, and had presented his three sons, As'va Gupta, Dhana Gupta and Upa Gupta, to his tutor. A prophecy of Buddha is quoted, according to which the birth of Upa Gupta was to take place a hundred years after his demise (*mama nirvṛitimārabbhya s'atavarshagate upaguptanāma bhikshurutpatsyati*. Fol. 23-24). This chronology, however, does not accord with the statement that As'oka was the thirteenth from Bimbisāra, a contemporary of Buddha. A contemporary of Aśoka could scarcely be born within a hundred years of the reformer's death. Such a prophecy, however, was needed to exalt the rank of the great teacher who became the spiritual guide of so mighty a sovereign as Aśoka. Having studied Buddhism under this tutor, Aśoka, under his guidance, went on a pilgrimage to all the principal holy places, visiting the tree under which, in the Lumbini garden, Buddha was born, the places sanctified by the saint's youthful sports, and the tree under the shade of which he performed his long protracted penance. This last tree is named Jambu briksha, (*Eugenia jambulana*) and not, as is usually believed and elsewhere described, an Asvatha. At all these places Aśoka caused a Maṭha or monastery to be established for the adoration of the "Three jewels."

When the teacher retired to his own hermitage, Aśoka caused a proclamation to be issued, declaring Buddhism to be the religion of his country; and devoted all his wealth to the propagation and glory of his new religion,

and particularly in the embellishment of the Bodhi Tree, or the Tree of Knowledge, at Buddha Gayā ; but the name of the place is not given in the text. His chief queen Pavishyakshitā was, however, annoyed at his forsaking the old family religion, and, finding that she was neglected, employed a secret agent, a Chandāli named Mātāṅgī, to destroy the sacred tree. The woman employed her sorcery and medicines to bear on the task, and the tree soon withered up. News of this sad occurrence was brought to Aśoka, and he was deeply grieved. The queen tried her utmost to cheer him, but he was inconsolable. At last she employed her secret agent to revive the tree by her magic arts, and this was soon effected. Thereafter the king devoted five years to the society of the Buddhist congregation. He deputed Supiṇḍola Bharadvāja, a Yati from the Mándār Hill, to preach the true religion everywhere over his empire, and celebrated, with great pomp, the quinquennial humiliation and conference, giving a great profusion of wealth, raiment and food to the clergy.

About this time he also celebrated the marriage of his son Kunāla with a maiden named Kānchanamālā, and soon after deputed the son to quell an insurrection in Takshaśilā, a distant province, which seems to have been ill at ease under the house of Bimbisāra. Kunjarakarna, the chief of the rebels, succumbed to the powerful army which followed the prince, and peace was soon restored. The insurrection, however, would appear to be a feint, and the real reason, as in the case of Susīma and Aśoka himself, was the removal of a troublesome prince from near the throne. It is stated, apparently by way of euphemism, that soon after the deputation, the king saw, in a dream, the prince's face all pale, haggard, and dried up, and, being informed by astrologers that that portended one of three things, *viz.* loss of life, retirement from the world as a hermit, or loss of sight, was greatly grieved, and neglected all his regal duties. One of his queens named Tiśyakshitā, who was a step-mother of the prince, heard of this, and thinking it a good opportunity for her, undertook the superintendence of all business of the court, issuing orders and herself signing and sealing all despatches. She caused a letter to be written to Kunjarakarna and impressed it with the royal signet, directing Kunjarakarna to deprive the prince of his eyesight, as the least of the three evils. Kunjarakarna was at a loss how to carry out the order. The prince heard of the mandate, and had it duly carried out through the instrumentality of a Chandāla—the task having been held as too cruel to be executed by any person of a higher caste. He then assumed the garb of a beggar, and secretly left Takshaśilā to roam about the country. In the course of his peregrinations he came to Pāṭaliputra, and one night took shelter in the royal elephant stables, where at midnight he amused himself by playing on a flute. The king, from his chamber, heard the music, and was charmed

by it. Next morning he sent for the musician, and recognised in him, his only son. Explanations followed, and the king, in a fit of anger, took up his sword to behead the wicked queen; but the youth interceded in the name of Buddha, and pacified him. This act of mercy for an enemy brought on a miraculous restoration of his sight.

Subsequently, seeing the earnest devotion of the king for the diffusion of Buddhism in his kingdom, certain Tīrthikas urged on Vītaśoka, the king's brother, to refuse to accept the new religion. The king had tried his utmost to induce his brother, but failed. The king's minister then set about the task, and by offering him the kingdom made him a convert, and installed him king. Aśoka was greatly annoyed at this, and ordered the usurper to be immediately beheaded; but, through the intercession of the minister, a respite was granted for seven days, after which the prince flew to the shelter of Upa Gupta, and afterwards accepted from Guṇākara, a disciple of that teacher, consecration as a houseless hermit. This renunciation of the world did not, however, enable him to escape with his life. It so happened that at this time a professor of the Nirgrantha school, who reviled the religion of Buddha, had got a picture painted, representing himself with the likeness of Buddha lying at his feet, and this he had circulated widely in the province of Puṇḍravardhana, and Aśoka, hearing of it, had proclaimed a price (some dinars) on his head. A cowherd (Ābhīra) had heard of this, and one night taking Vītaśoka, with his long beard, matted hair, and unkempt nails, to be the Nirgrantha, cut off his head, and presented it to the king with a view to obtain the promised reward. The sight of the head deeply grieved the king; and he sought from Upa Gupta, his spiritual guide, religious consolation for his many acts of cruelty. It is scarcely necessary to observe that this story contains the germ of a fratricidal war in which Vītaśoka had been set up by the conservatists of the time to oppose the Buddhist reforms of Aśoka, and which, after a few days, terminated in the overthrow of the malcontents.

The history of Aśoka is concluded here, and the rest of the work is made up of moral tales related by Upa Gupta for the edification of the king. Nothing positive is anywhere said in it as to what was the religion of Aśoka before he accepted Buddhism. The belief, however, had until lately been general that he was a Hindu, and it was supported by the Pāli annals of Ceylon, which describe him to have followed the doctrine of the Brāhmins. An essay, however, has appeared in which Mr. Thomas demurs to this conclusion, and marshals, in dense array, a large mass of evidence to show that he was a Jain. As the work of a profound scholar, *facile princeps* in the department of Indian numismatology, and thoroughly conversant with the antiquity and history of India, the essay deserves the highest consideration; and the ability and tact with which the evidence has been set forth leave no

room to doubt that in this country Jainism was a prevailing religion in the time of Aśoka and for some time before it. But it must be added that there has not been a single fact adduced which could directly bear upon the early religion of the author of the rock and the Lāt edicts. It is abundantly evident from the edicts that Aśoka did forsake one religion and accept another; but what it was he forsook, the edicts do not say. There is one passage in these edicts, however, which affords circumstantial evidence of great importance. Mr. Thomas has carefully analysed the whole of the edicts, and described at great length their scope and purpose, but the particular passage to which the speaker referred had been somehow all but entirely overlooked. The passage referred was the last paragraph of the first Tablet, and in adverting to it, Mr. Thomas simply quotes these words: "This is the edict of the beloved of the gods Rājā Piya-dasi—the putting to death of animals is to be entirely discontinued." Now the passage, as rendered by Prinsep, runs thus—"Formerly in the great refectory and temple of the heaven-beloved king Piya-dasi daily were many hundred thousand animals sacrificed for the sake of meat food. So even at this day, while this religious edict is under promulgation, from the sacrifice of animals for the sake of food, some two are killed, or one is killed;—but now the joyful chorus resounds again and again—that from henceforward not a single animal shall be put to death."* In the revised version of Professor Wilson, this passage runs as follows: "There is but one assembly, indeed, which is approved of by the Rājā Piya-dasi, the beloved of the gods, which is that of the great kitchen of Rājā Piya-dasi, the beloved of the gods; every day hundreds of thousands of animals have been slaughtered for virtuous purposes, but now, although this pious edict is proclaimed that animals may be killed for good purposes and such is the practice is not determined, these presents are proclaimed that hereafter they shall not be killed.†"

Dr. Mitra was not satisfied with the second version, as it made the king declare "that the only assembly he approved of was 'his' own great kitchen." The worst of gourmands would have scarcely said so in a royal edict. It was, however, not necessary to discuss the question; it was enough for the purposes of the speaker that both versions admitted that hundreds of thousands of animals were at one time sacrificed for human food in the kitchen of Aśoka; and this fact, he held, was sufficient to show that that monarch at the time could not have been a Jain. The philosophical character of Jainism allied it very closely to Vedāntism, and in that respect it could well pass for a Hindu form of faith. Its belief in the Tirthankaras, or incarnations of the Godhead for the redemption of sinners and the spread of the true religion, also brought it into close relationship

* Journal As. Soc. VII, p. 257.

† Jour. Roy. As. Soc. XII, p. 164.

with the religion of the Bráhmans. But it set itself in antagonism to Hinduism, the old faith of the country, by denouncing the Vedas as false, and the sacrifices enjoined in them as mischievous and sinful. A hypertrophy of the feeling of mercy for animated creatures, forms its cardinal point. It might be that originally this feeling was not carried to the absurd extent which resulted, to quote the vivid language of Mr. Thomas, in "devices of Hospitals for the suffering members of the brute creation, and ultimately, in after times, progressing into the absurdity of the wearing of respirators and the perpetual waving of fans, to avoid the destruction of minute insect life. An infatuation, which eventually led to the surrendering of thrones and kingdoms, to avoid a chance step which should crush a worm, or anything that crept upon the face of the earth; and more detrimental still, a regal interference with the every-day life of the people at large, and the subjecting of human labour to an enforced three months' cessation in the year, in order that a moth should not approach a lighted lamp, and the revolving wheel should not crush a living atom in the mill."* But it is impossible to conceive a form of Jainism which tolerated the daily sacrifice of hundreds of thousands of animals for meat food or religious worship. From its very conception Jainism, like Buddhism, was a protest against the sacrifices of the Vedas. At a time when the Vedic ordinances enjoined hecatombs of cattle as the means of salvation, and the cruel practice of driving wooden spikes into the hearts of the victims as the orthodox mode of slaughter, such a protest was not only needed, but could not but most effectually appeal to the feeling of the public, and ally it on its behalf. This protest apart, there would be no *raison d'être* for Jainism; and to suppose therefore that Aśoka, as a Jain, could, for purposes of *pūja* and food, daily sacrifice hundreds of thousands of animals, would be to assume a gross inconsistency. As a Hindu, following the canons of the Kalpa Sūtras, he could do all that and more most appropriately; and the presumption therefore would be strong, that he was a Hindu following the Hindu faith when he indulged in those sacrifices, and became a Jain, or a Buddhist, when, in the 10th or 12th year of his reign, he prohibited those sacrifices. This would be a much more reasonable solution of the question, than the supposition that, notwithstanding his Jainism, he had, from the heedlessness of youth, or the love of "cake and ale," indulged in transgressions of the rules of his ancestral faith.

Such a solution would, likewise, be in keeping with the accounts of the Páli annals of Ceylon, which in a case of this kind, was more reliable than deductions founded upon monograms and mystic symbols of doubtful significance, and of such extensive currency that their

* Journal Roy. As. Soc., IX, p. 189.

testimony could not be of any use in settling the question. The most important of these symbols was the *svastika*. It was unquestionably held in great veneration by the Jains; but, as shewn elsewhere (Proceedings for June 1877), it was held in equal esteem by the Hindus, and was well known to, and used by, the Greeks, Romans, Egyptians, Assyrians and other nations of antiquity. Mr. Thomas is of opinion that the Pāli annalists of the 5th century, living years after the event, could not be expected to afford the best evidence on the subject. "Under any circumstances," he observes, "their testimony would not carry much weight in the argument about other lands and other times, and it is moreover, a crucial question as to how much they knew about Brāhmanism itself, and whether the use of the word Brāhmanism does not imply merely, in this sense, a non-Buddhist or any religion opposed to their own."* This assumption of the ignorance of the Sinhalese annalists as to the true nature of Brāhmanism is, however, gratuitous. There is nothing to justify it: on the contrary much in their writings to show that they were perfectly familiar with it. Their intercourse with the people of the Coromandel Coast gave them ample opportunities to know the nature of Brāhmanism; and Brāhmanism in the South did not, in the 5th century, differ much, if at all, from that of the North.

As a collateral evidence of much weight in the case, Dr. Mitra read from the *Aśoka Avadāna*, an extract in which are described the means which certain Tīrthikas are said to have adopted for checking the progress of Buddhism, and persuading Vītaśoka, the younger brother of Aśoka, not to adopt the religion of Buddha which his brother was promulgating, and to rise in rebellion against him. It runs thus—

"Beholding this (the attention paid by Aśoka to the dissemination of the Buddhist creed), these arrogant Tīrthikas, oppressed by the fire of envy, collected together, and said to each other: 'Should this king Aśoka continue a worshipper of Buddha, all other persons, encouraged by him, would likewise become followers of Buddha. None among the people will be devout; none of the good Śrāvakas will listen to us with respect. We should therefore, for the promotion of honor and fame, always adopt such means as will make us fully trusted.' Excited by this speech, the arrogant Tīrthikas came to the resolution of adopting immediate action. Then these Tīrthis went from house to house of well-disposed people, and, blessing them, thus addressed them: 'Honorable sirs, listen to us if you wish for your own good. Should you wish for a blessed hereafter, devote yourself to the true religion. Ours is the true religion, and therefore attend to it with all respect. The religion of the Bauddhas is not the true one, for it provides no salvation (*moksha*).' Hearing these words some were convinced, others vacillated, and some would not believe them at all. Thus those

* Journal Roy. As. Soc. IX, p. 181.

Tīrthikas, wishing for honors daily seduced credulous people. Then those arrogant ones, longing for fame and respect, proceeded to visit Vītaśoka, the brother of Aśoka. Appearing before Vītaśoka, the son of Vindusāra, they blessed him, and stood in front of him. Vītaśoka, seeing them in front of him, saluted them, and enquired the object of their visit. 'Reverend sirs, what has brought you so anxious to this place? You are always welcome to relate whatever you wish.' Thus encouraged those arrogant Tīrthikas, looking at each other, thus addressed the prince: 'May success always attend you, great king (*Mahārāja*); may you always prosper; may you be free from all fear. Since we have come to advise you for your good, it is meet that we should tell you all. Should you wish for a blessed hereafter, listen to our advice. Ours is the true religion, alike salutary here and hereafter. Those who know best declare it to be the best of all systems of religion. Therefore, O learned king, believe in it, listen to our religion, and follow it with ardour. Then every thing will prosper about you; and, overcoming all your enemies you will become a universal monarch, (*Chakravartī*). The religion of the Bauddhas is not true, for it offers no salvation (*moksha*). Therefore that religion should never be listened to. Since those shaven-pated, vile destroyers of their family preach a false religion, overthrowing all caste and all duty—men, devoid of the religion of the Vedas, un-Brāhmanical in their conduct, and vilely passionate—they should, O king, on no account be respected by you. No Bauddha should be revered, nor seen, nor touched, nor worshipped, nor spoken to, nor dwelt with in the same house, nor visited by any one. You should on no account eat with them, nor present anything to a Buddhist sanctuary. Even when by mistake men listen to the doctrines of the Bauddhas with regard, they suffer from various calamities, and at last repair to hell. Hence, O king, should you wish for a blessed hereafter, never listen to the doctrines of the Bauddhas with respect. Should by delusion, one, looking at the merits of their religion, accept it, he, fallen here, will be translated to hell hereafter. For these reasons, O great king, accept not the doctrine of Buddha, but, abiding by our canons, follow the true religion with devotion. By so doing you will here and hereafter enjoy great blessings. No evil shall ever befall you, and you will proceed on by the true path. Listening to our words, weigh well, which is good and which is evil, and for your own advantage follow the path of duty.' Vītaśoka heard this address of the Tīrthikas, but remained unconvinced of their truth. The Tīrthikas addressed him again and again, and at last brought him convinced, under their control."*

* तदा ते तीर्थिकाः सर्वे तद्बुद्धा येऽभिमानिनः । ईर्ष्यामितापितास्त्रव सम्मिल्यैवं वभाषिरे ॥
भवन्तो यदयं राजा ह्यशोको बुद्धसेवकः । तथानुसोदिताः सर्वे भवन्ति बुद्धसेवकाः ॥

Now, this extract is from one of the works, which, according to Mr. Thomas, are "data, contributed from the very *nidus* of Buddhism in Magadha, whose passage into the ready refuge of the valley of Nepal, would *prima facie* have received an unadulterated version of the ancient *formulae*, and have supplied a crucial test for the comparison of the southern developments,

तदत्र नो जनाः केचिद् भवन्ति अथवा तथा । इमे सत्रावकाशापि न शृण्वन्ति समादरात् ॥
तद्वयं सर्वथा सर्वे यशोमान्यप्रददये । कुर्वीमहि तयोपायं यथा स्यामः प्रमाणिकाः ॥
श्रुतेति तीर्थिकाः केचिद्यशोमानाभिलाषाः । तथेति समस्तं कृत्वा कर्तुमेवं पुरोचरन् ॥
तत्र सर्वत्र ते तीर्थाः अद्यालूनां गृहं प्रति । गत्वाशीर्वचनं दत्त्वा पुर एवं समब्रुवन् ॥
भदन्ताः श्रूयतां सर्वे यद्विदं वः प्रचक्ष्यते । यद्यस्मि सुगतौ वाञ्छा तत् सुधर्मं प्रसीदत ॥
अस्माकमेव सद्वर्त्मसद्वत्तं शृणुतादरात् । बौद्धानां न हि सद्वर्त्मो यतो मोक्षो न विद्यते ॥
इति तैर्गदितं श्रुत्वा केचिहोकाः प्रबोधिताः । केचिद्दोलायमानाश्च केचिन्नैव प्रतीतितः ॥
तथा ते तीर्थिकाः सर्वे अद्यालुषु जनेष्वपि । मान्यलुब्धाः प्रभाषन्ते प्रचरिरे दिने दिने ॥
ततस्ते मानिनः सर्वे यशोमान्याभिलाषिनः । अशोकभातरं वीतशोकं द्रष्टुमुपाचरन् ॥
तत्र ते वीतशोकं तं विन्दुसारवृषात्मजं । दृष्ट्वाशीर्वचनं दत्त्वा पुर एव समाश्रयन् ॥
ततस्तान् समुपासीनान् वीतशोको निरीक्ष्य सः । प्रणत्य विनयं कृत्वा पप्रच्छागतिकारणं ॥
भगवन्तः किमर्थं वो यदिहागच्छथादरात् । यदिच्छितं तदस्मापु वक्तुमर्हथ सर्वथा ॥
इति तेनोदितं श्रुत्वा ते तीर्था अभिमानिकाः । परस्परं समालोक्य तं वृषात्मजमब्रुवन् ॥
जयोऽस्तु ते महाराज प्रसीद हितमृद्धव । यद्वयं ते हितं वक्तुमिहायामः समादरात् ॥
तदस्माभिर्हितं वाक्यं वक्तव्यं हि प्रचक्ष्यते । यद्यस्मि सुगतौ वाञ्छा तदस्माकं वचः शृणु ॥
अस्माकमेव सद्वर्त्ममहासुत्रशुभङ्करं । सर्वधर्माधिकं प्रोक्तं सर्वशालेषु तद्विद्वैः ॥
तस्माद्राजन् महाविज्ञ विदित्वैव प्रमाणय । अस्मद्वर्मं समाकर्ण्य भज नित्यं समाहितः ॥
तथा ते ऋसं नित्यं सर्वत्रापि भवेद्भुवं । सर्वारींश्च विनिर्जित्य चक्रवर्ती भवेरपि ॥
बौद्धानां न हि सद्वर्त्मो यतो मोक्षो न विद्यते । तस्मात्तद्वर्त्मना नैव श्रुतया हि कथञ्चन ॥
यतस्ते मुण्डिता भेषाः खकुलधर्मनाशकाः । मिथ्याधर्माभिवादान्ते जातिधर्मसमुज्झिताः ॥
वेदधर्मवह्निर्जाता अन्नक्षणा विचण्डिकाः । अनाचारा अशुद्धाङ्गा अशुचित्रतचारिकाः ॥
तस्मात्ते भवता राज्ञा नैव मान्याः कदाचन । वन्दनीया न ते बौद्धा दर्शनीया न केनचित् ॥
नापि स्पृष्टा न पूज्याश्च सभाष्या नैव ते सह । न स्यातयं न गन्तव्यं भोक्तव्यं नापि सर्वथा ॥
किञ्चिदपि न दातव्यं बुद्धत्वेव कथञ्चन । प्रसादादपि बुद्धानां शृणुधर्ममादरात् ॥
ते सर्वे नरकं गत्वा दुःखानि सर्वदाप्नुयुः । तस्माद्राजन् स्वयं तेषां बुद्धानां धर्ममादरात् ॥
श्रुतव्यं नैव कुत्रापि यदि सद्गतिमिच्छते । यदि मोहाद्गुणस्तेषां दृष्ट्वा धर्मं प्रमाणयेत् ॥
स इहापि परिधृष्टः परत्र नरकं व्रजेत् । इति हेतोर्महाराज मा भज बुद्धशासनं ॥
अस्माकं शासने स्थित्वा भज सद्वर्त्ममादरात् । एवं कृते परवेष्ट सर्वदापि फलं लभेः ॥
दुर्गतिं नैव यायास्व सद्गतिमेव यास्यसि । इत्यस्मद्वचनं श्रुत्वा हितार्थितं विचारय ॥
स्वात्मनो हि हितं कर्तुं सम्यग्धर्मं समाचर । इति तैस्तीर्थिकः प्रोक्तं वीतशोको निश्म्य सः ॥
नैवं तद्वचनं सत्यमिति मत्वा मुमोद न । पुनस्ते तीर्थिकाः सर्वे एवं द्विधा त्रिधाऽपि तं ॥
वीतशोकं समाभाष्य परिबोध्य वशेनयन् ॥

as contrasted with the northern expansions and assimilations of the faith.”* The work itself professes to have been compiled by a disciple of the great teacher who converted Aśoka to the faith of Buddha, and in so far may claim to be all but contemporary authority. It is probably, however, of a much later origin; but one redaction of it was translated into the Chinese in the reign of the Western Tsin dynasty (circa 265-313),† and consequently the work must be admitted to be considerably older than the date of that version, and it leaves no room to doubt that at least one of the prevailing religions of the time of Aśoka was that of the Tīrthikas or of the Brāhmanic followers of the Vedas. It was those Tīrthis who felt most anxious about the perversion of Aśoka to the faith of Buddha, and not the Jains. They too put themselves most forward to check the evil; they everywhere denounced Buddhism as false; and kept numbers of the people attached to Hinduism. They again deterred the brother of Aśoka from becoming a Buddha, and set up the fratricidal war which terminated so disastrously against their protégé and his ancestral religion. And if Vītaśoka was a Hindu, it would be too much to say that his elder brother in his youth was a Jain, and that he had got it from his ancestors. The two uterine brothers could not but have been brought up in the same religion; and since Vītaśoka was a Hindu according to data admittedly “contributed by the very *nidus* of Buddhism,” the conclusion becomes all but inevitable that his brother likewise was one until he became a Bauddha.

The PRESIDENT said that he had not been able to read the whole of Mr. Thomas's paper although that gentleman had kindly sent him a portion of the proof. He was therefore hardly competent to discuss the question raised by Dr. Rājendralāla Mitra.

At the same time more and more materials were daily accumulating and it was perhaps premature to form any very positive theory as to the exact nature of Aśoka's earlier faith. Even since Mr. Thomas's article was sent to press translations had appeared in the ‘Indian Antiquary’ by Dr. Bühler of General Cunningham's singular dated inscriptions ascribed to Aśoka, and if these were correctly ascribed, as it seemed scarcely possible to doubt they were, then a new light had been shed on Aśoka's religious feelings, for in these inscriptions, recorded at the close of his long reign, he recorded that though he had held the true faith‡ for many years, he admitted that he had held it in a lukewarm fashion, and that it was only for the preceding twelve months that he had taken such measures as effectually to put a stop to the worship of the gods formerly held in reverence.

* Journal Roy. As. Soc. IX. p. 171.

† Beal's Chinese Tripitaka, pp. 88, 89.

‡ That by this was meant Buddhism there can hardly now be any reasonable doubt.

Moreover Dr. Rájendralála's arguments turned a great deal on the interpretation of a particular passage in one of Ásoka's edicts. The President was glad to inform the Society that a complete collection of all the edicts of Ásoka, carefully revised by General Cunningham, with corrected translations, was just ready for publication; it might be wise to wait till that appeared before trusting too much to the presumed interpretation of a single passage.

Another part of Dr. Rájendralála Mitra's argument turned on the character of Jainism; but was it certain that the Jainism of to-day was the Jainism of Asoka's day, or in what respect that differed from Buddhism? The President might announce to the meeting that he had received from Dr. Bühler information that he had, in conjunction with Dr. Jacobi, discovered almost conclusive evidence that Buddha Sakya Muni or Gautama was actually contemporary with Mahavira, the latest Tirthankra of the Jains. This coincided with Colebrooke's conjecture, adopted by Cunningham, that Gautama was at one time a disciple of Mahavira's. The Jain books recorded the fact that Mahavira had a disciple named Gautama, but beyond that fact little was said of him, and this would quite coincide with the supposition of his having at a later date left the school of Mahavira and set up one of his own.

MR. EDGAR called attention to the fact that in some of the Buddhist writings the name of "Mahavira" was given to Buddha also.

The PRESIDENT replied that he was aware of the fact but had not mentioned it, as it bore rather on another phase of the question. Raja Sivaprasad had based on this undoubted fact the very probable conclusion that "Mahavira" was a mere honorific title, and indeed had gone further and had endeavoured to identify the Mahavira of the Jains with the Kasyapa of the Buddhist legends, but so far this was little but conjecture, if indeed it was quite consistent with the legends of Buddhism.

Captain WATERHOUSE read translations of extracts from letters from M. Ch. Ujfalvy and the Abbé Desgodins, descriptive of recent geographical researches in Turkistan and Thibet—published in the October number of the *Bulletin de la Société de Géographie*.

The following interesting account of Farghana (or Khokand)* is given by M. Ch. de Ujfalvy in a letter to the General Secretary of the French Geographical Society, dated Tús, 19th August 1877.

"Having left Tashkend six weeks ago, I proceeded first to Khokand with post-horses. After leaving Khokand, I made a tour on horseback, in order to see more closely the character of the country and to be able to

* The spelling of the names has been given as in Col. Walker's map of Turkistan. (J. W.)

study its inhabitants and monuments quite at my ease. In this manner I travelled 655 kilometres, passing through Marghilán, Wadil, Sháh-i-Mardán (lake Kútbán Kúl), Uch-Kúrgán, Naukat, Osh, Andiján, Naman-gán, Kassán and Tús (called by the Russians Tehúst).

"As regards ethnology, I have succeeded in measuring more than 200 individuals; and have studied the manners, customs, creeds and languages of the different races inhabiting Farghanah. I have collected specimens of the flora and fauna of the country, with fragments of its minerals, and have made enquiries as to the productive powers of the soil and the products of national industry. I have purchased all objects which appeared to me to give a fairly correct idea of this industry. Finally I have made a collection of Greek, Bactrian, Arab and other coins, and have studied the archæological remains of the country. A few details of the results of these studies will acquaint you at once with my researches.

"Farghána is with the district of Zaráfshán the only fertile tract in Russian Central Asia which appears to have a future more or less close at hand from the point of view of the political economist. The country appears to be an oblong valley, of elliptical form, shut in on nearly all sides. The nucleus of this valley is surrounded with a triple ring of mountains of a diverse character. The centre also shows three zones entirely unlike one another.

"Let us run rapidly through these six zones, starting from the centre, that is to say from the banks of the Sir Daria.

"The first zone, about the banks of the Sir Daria, the Narin and the Kara Daria, is nearly everywhere sandy, rarely grassy; here and there, an oasis of verdure appears, the ephemeral existence of which is often dependent on storms and moving sands. A few Usbegs and some poor Kara-Kalpaks nomadise about these inhospitable tracts.

"The second zone, fortunately more extensive than the first, is the most fertile in the country. It is a succession of gardens, fields of wheat, maize, jugara, cotton, vineyards and meadows. In the same way as oases are rare in the first zone, parts covered with sands or moorland are unfrequent in the second. It is the garden of Farghana, and the tract situated between Andiján and Namangán, called Eki-su-arasi, is particularly distinguished by its incomparable fertility. In this zone the great commercial centres of the country are to be found, such as Khokand (as a Sart town much above Tashkend in every way), Marghilán (the new Russian capital), Osh, Andiján and Namangán. The most numerous inhabitants of this tract are the Sarts (a mixture of Tajiks, Usbegs and occasionally of Kirghiz), the Usbegs and the Kipchaks, Tajiks, Túrúks, Kashgarians, Kara Kalpaks, Jews, Louli gypsies, Mazang gypsies, Kara Kirghiz, Hindustanis and Afghans are also to be found there.

"The third zone, of less extent than the preceding, is generally stony and sometimes covered with moorland and even with sand. Here and there attempts have been made to reclaim by cultivation some of the land from its primitive barrenness, and these attempts have succeeded fairly well, seeing that the soil is everywhere fit for ploughing. Usbegs and Kipchaks are the few inhabitants of this tract.

"The fourth zone, situated on the most fertile slopes of the mountains, is, to my mind, the most beautiful part of Farghana, enjoying all the advantages of a warm climate, while scarcely suffering any of its inconveniences.

"It is the tract that would be most suited for an European colony. It is inhabited almost exclusively by Tajiks who have often entirely preserved the purity of their race. Usbegs and Kipchaks are to be found in small numbers and the Karakirghiz occasionally settle down there. Isfara, Wadil, Uch-Kurghán, and Naukat to the south; Kasán and Tús to the north are its principal agricultural and commercial centres.

"The fifth zone, that of the valleys, mountains, hill slopes and plateaux, often presents a somewhat barren appearance, especially when the burning sun of these parts has burnt up the vegetation, but vast grassy steppes are also frequently to be found, which offer excellent sustenance to the flocks of the Karakirghiz, and neighbouring races of Usbegs and Tajiks. It is the home of the Karakirghiz who move about there in all liberty.

"The sixth zone, finally, is the most elevated and the most picturesque, but at the same time the most desolate. In this zone are situated the numerous routes, passes and defiles which lead into Semiretché, Kashgaria, Karatigin, and the government of the Syr-Daria. It is, however, specially interesting from a commercial and strategical point of view. Lapis-lazuli, amethyst, rock-crystal, naptha, salt, coal and mineral springs are to be found there. When at some early future time, all the resources of the country are laid under contribution, this region will equally be called upon to render notable services to the national industry.

"I have already given the Anthropological Society numerous details regarding the inhabitants of Farghana, and I reserve bringing this question before the Geographical Society until I shall be able to present to them the little ethnographical map of these regions I am now compiling.

"As regards archæology there is little to be said considering the extent of the country. I have, however, succeeded in finding some places which appeared rather interesting. I excavated a Kurgán (tumulus) in the environs of Marghilán, but unsuccessfully, only finding some fragments of pottery, glass beads, &c., and bones of no value whatever.

"The Takht-i-Sulimán at Osh is more interesting for its picturesqueness than for its archæology, and the numerous mosques and madrasahs of

Khokand and Osh, generally of a rather agreeable construction, are all more or less modern. At Namangán, however, there are two old mosques called Hojamné Kabri and Aziz Halfa, the first of which is an architectural *chef-d'œuvre*. I have brought back some of the inscriptions I was able to copy. Near Kasán, the oldest town in Farghana, is a cemetery called Sad-pir, which contains nearly 70 tombs, all with inscriptions. This cemetery dates from upwards of 600 years ago, when the Calmucks invaded and pillaged the country and slaughtered its richest and most notable inhabitants. I have taken impressions of more than 20 inscriptions, and shall take back three stones to Tashkend. The Tajiks of Kasán say that they came into the country before the introduction of Islam. At 16 kilometres from Kasán there is another rather curious tomb, called Safed Boulán. Unfortunately there are no inscriptions about it. Finally, near Tús, not far from the little village of Háuva, is another cemetery named Mazar; there are in it five stones with inscriptions. I have taken impressions of three of these stones which appeared to me the finest, and which the mullahs of the place could not decipher. I go back to Tashkend and hope to return to Europe by Siberia."

Extract from a letter by the Abbé Desgodins to his brother, dated 28th March 1877, containing Notes on Thibet.

"The following is some new information which should confirm the identity of the Yar-Kiu-tsang-po river of Thibet with the Brahmaputra. An old Llama related to me yesterday that in his youth he had travelled a great deal and had visited nearly the whole of Thibet. He had followed the great river from its source in or near the lakes of Tso-ma-pang (Manasarowar), which are situated in the western part of the province of Ngare, the most western province of Thibet, and while making his pilgrimages of devotion, he had arrived as far as the frontiers of the savage tribe of Lhopas. He said that at a distance of some days' march from Lhassa, the river turns towards the south and making a long bend passes through the Tibetan district of Hia-yul governed by the Kalun Doring of Lhassa, a very populous and rich district which is situated just to the north of the Lhopas. The river enters the country occupied by this wild tribe and passes through perpendicular rocks, precipitous and bare, without paths, and over which the only passage is by means of bad ladders made of the stems of climbing plants. After a certain course through the Lhopas country, the river falls perpendicularly from the top of a rock into a valley the name of which he did not know. The height of the fall is so great that it makes one giddy. At this spot, he said, the stream is almost as considerable as the Kin-cha-Kiang at Bat-hang and the Lan-tsang-kiang at the Salt Lakes. The details he gave me regarding these Lhopas removes all doubt. They are the same as those

spoken of by the slave, now a Christian, of whom I spoke in a former paper and called Abors by the English and M. Krick. All this information perfectly confirms the information I gave in my letter of the 14th June 1874, but here is something further in favour of it.

"Every one in Assam knows the fall of Brahmakund, whither the heathen resort as pilgrims. M. Bernard has often spoken to me of it as a fall remarkable for its height, the force of its volume of water, and the hollow it scoops out in falling. The southerly position attributed by my *confère* to this vast fall, and the northerly position given to it yesterday by the Llama, induce me to believe that the fall at Brahmakund must be precisely the fall of the Yar-Kiu-tsang-po which then becomes the Brahmaputra, the latter being navigable almost immediately after this addition.

"My interlocutor assured me over and over again that the Yar-kiu-tsang-po did not reach so far as the Nahong (Mishmi) country, but that it disappeared more to the west among the Lhopas (Abors).*

"I give this information just as I received it, but I must confess I consider it very probable because it perfectly confirms the information I had previously received.

"This good Llama has also given me other geographical information. I shall only now mention those points which appear to me certain and confirmatory of the information I had already received and checked some time ago.

"In going from Cha-mu-to on the Lan-tsang-kiang, to Lhassa by the official highway, after having passed the Lon-tse-kiang, the principal posts of Lo-rong-dzong, Chu-pan-to (Tibetan, Chúpádo) Lali (Tibetan, Larego) and Kiam da (Tibetan, Kong-bon-Kiam-da) are reached. To the south of Chou-pan-to and Lali, at about two days march, the independent principality of Po-yul (Chinese Pomi) is passed on the left hand (looking south). This principality recognises the emperor of China and is governed directly by the third ambassador of Lhassa who bears the title of I-tsin. It does not recognise in any way the Tibetan king of Lhassa. It is divided between four native chiefs, who are almost quite independent in their respective territories and only consult together on the affairs common to the tribe. One of them calls himself Don-ya-peun, or chief of Don-ya to the south-east. I do not know the names of the rest. This country is said to be fairly rich, of difficult access, surrounded as it is on all sides by high pre-

* From a conversation with the 'Pandit,' Nain Singh, I learnt that the name of Lhopa is given by the Tibetans to the Daphla tribes. This fact taken in connection with the Llama's account seems to favour Lieut.-Col. Godwin-Austen's belief, founded on observations made during the Daphla Campaign, that the Subansiri is the continuation of the Sanpú. As shown on the map, however, these tribes are a good deal to the west of the Subansiri. (J. W.)

cipitous mountains. The red lamas are very numerous there, robbers still more so, and they often make expeditions beyond their own boundaries. Leprosy is said to be very common. Po-yul has as a neighbour on the west the Tibetan tribe known under the name of Kong-ba, of which Kiam-da is the principal town or city. This country stretches almost as far as Lhasa, it is said to be very populous and fairly rich, but the inhabitants are very much stricken with leprosy. Another rather singular peculiarity of this country is that the proportion of girls is very much larger than that of boys in the statistics of births.

"The country of Po-yul (Po-mi) does not touch, to the south, the chain of the Himalayas and the country of the wild tribes, from which it is separated by a band of country governed by Lhasa.

"The names of the different Tibetan districts of this zone going from east to west are as follows. Hia-yul, to the north of the Lhopas (Abors), Tse-tang, Sang-ye, Meun-pa, these, I believe, are situated to the north of Sikkim and Bhután, but for these last names I must get further information. I only mention them with all reserve.

"The eastern limit of Po-yul is the western slope of the chain of mountains which comes down from north to south on the right bank of the Lutse-kiang. When I passed along to Pomda and Zo-gong on the Du-kió, in 1862, every one pointed out to me the west, beyond the chain I have just mentioned, as being the true position of Poyul."

MAJOR-GENERAL THUILLIER said :—The extracts we have just heard read from the French Geographical Society's Journal were of particular interest at the present moment, as to the identity of the great Thibetan river Sanpú, or Yaru, and its connection with the Brahmaputra in Upper Assam, because that still pending problem was receiving great attention by the officers of the Great Trigonometrical and Topographical Surveys, Lieuts. Harman and Woodthorpe, R. E., who were just now exploring the course of the Subansiri river in north Lakhimpur, and endeavouring to push up beyond the course as laid down by Major Godwin-Austen, when employed with the Daphla military expedition in 1874-5, to see if there was any possibility of the Sanpú breaking through the high range of mountains in that direction and so falling, through the Subansiri, into the Brahmaputra about the meridian of 94° E. Longitude, or near Lakhimpur in Assam. It may be remembered that the Trigonometrical Survey native explorer "Nain Sing" came down from Lhasa, through Bután due south, and entered Assam at a place called Udalguri almost on the meridian of Gauhati. He traced the Sanpú, and it is recorded in the latest map of Assam published at the Surveyor General's Office, down to the parallel of about 29° Latitude, which, it will be observed from the map on the table, is in close proximity to the supposed continuation of the course of the Subansiri, as seen by Godwin-Austen from the highest elevation from which he observed in the Daphla country.

The volume of water down the Subansiri is said to favour the idea of its junction with the Sanpú, and further careful observations are now being made by Lieuts. Harman and Woodthorpe, R. E., to ascertain whether the Subansiri exceeds the capacity of the Dihong or of the Dibong, the former of which has long been held by English geographers to be the real outlet for the Sanpú into the Brahmaputra, near Sadiya.

It was unfortunate that the journey taken by the explorer Nain Sing, below or south of Lhassa, was too far west to solve this interesting and long pending doubt, but the statement made by the author of the paper now read, certainly favoured the assumption regarding the probability of the Subansiri theory. The question, however, was altogether conjectural at present, and must remain so until more conclusive evidence is produced as to the real course of the Dibong as well as of the Subansiri upwards, or other native explorers can penetrate downwards from Lhassa to the head of the Assam valley through the Abor and Miri tribes inhabiting that remarkably unknown and untrodden region.

If at the time of the Daphla Military expedition Major Godwin-Austen and Lieut. Harman, then employed on the Survey, had been permitted to extend their explorations after the political and military objects of the expedition had been gained, and as so strongly urged by the late Commander-in-Chief, Lord Napier of Magdala, it is possible that a large extent of country in the direction of the northern branch of the Subansiri, as well as east of it, in the neighbourhood of the Abors and Miris, towards the Dibong, might have been laid down, but all that tract north-east of Lakhimpur still remains to be reconnoitred and it is hoped that by the strenuous exertions of the talented engineer officers now engaged in prosecuting the work as far as permitted by the Government of India, something may soon be achieved towards the satisfactory elucidation of this interesting and important geographical problem—and also towards a better knowledge of all the extreme N. E. Frontier round Sadiya and the head of the Brahmaputra, beyond or north of Brahmakund, so necessary for a due and proper construction of the map of the Assam Province and of British Indian limits in that direction.

The following paper was read—

1. *Pali Studies, No. 2, Vuttodaya.* By MAJOR G. S. FRYER, Deputy Commissioner, British Burma.

The SECRETARY read the introduction to this paper which will be published in full in Part I of the Journal.

LIBRARY.

The following additions have been made to the Library since the Meeting held in December last.

TRANSACTIONS, PROCEEDINGS, AND JOURNALS,
presented by the respective Societies or Editors.

Berlin. Die Königlische Preussische Akademie der Wissenschaften,—Monatsbericht, August 1877.

Grube.—Anneliden-Ausbeute, S. M. S. Gazelle. *Peters*.—Neue merkwürdige Art von fliegenden Fischen, *Exocoetus cirriger*, aus China und einen neuen Muraeniden, *Ophichthys bitaeniatus*, aus Mombas.

Birmingham. Institution of Mechanical Engineers,—Proceedings, July, 1877.

J. C. Wilson.—On the construction of Safety Valves. *F. W. Webb*.—On an improved form of Slide-Valve for Steam and Hydraulic Engines. *W. Froude*.—On a New Dynamometer for measuring the Power delivered to the Screws of large Ships.

Bombay. The Indian Antiquary,—Vol. 6, Parts 74, 75, December 1877, and January 1878.

J. W. McCrindle, Esq.—The Indika of Megasthenès. *Professor A. Weber*, —On the Krishnajanmāshtamī, or Krishna's Birth-Festival, translated from the German by Miss Tweedie.

———. The Vedārthayātna,—Vol. II, Pts. 5 and 6.

Boston. Society of Natural History,—Proceedings, Vol. 18, Pts. 3, 4, 1876.

Pt. 3. *G. W. Bond*.—Origin of the Domestic Sheep.

Pt. 4. *W. K. Brooks*.—Affinities of the Mollusca and Molluscoida. *Prof. W. H. Niles*.—Geological Agency of Lateral Pressure exhibited by certain Rock Movements. *S. H. Scudder*.—Notes on the *Forficularia*, with a List of the Described Species.

———. ———. Memoirs,—Vol. 2, Pt. 4, No. 5.

A. Hyatt.—Revision of the N. American *Poriferae*; with remarks upon foreign species.

Calcutta. Geological Survey of India,—Records, Vol. 10, Pt. 4, 1877.

V. Ball. On the Geology of the Mahanadi Basin and its Vicinity. *Dr. Feistmantel*. Note on Fossil Flora in India.

———. Mahābhārata,—No. 16.

———. Rāmāyana,—Vol. 6, No. 4.

———. Rigveda Sanhita,—Vol. 1, Pt. 4.

———. Sārvartha Dayini,—Part 1, chap. 2.

Dublin. Dublin University Biological Association,—Proceedings, Vol. 1, No. 3, 1875-6.

Greenwood Pim.—The Leaf structure of *Begonia*.

Frankfort. Die Senckenbergische naturforschende Gesellschaft,—Berichte, 1874-75, 1875-76.

———. ———. Abhandlungen, Band 10, Heft. 1—4; Band 11, Heft 1.

Band 10, Heft. 3, 4. *O. Bütschli.*—Studien über die ersten Entwicklungsvorgänge der Eizelle, die Zelltheilung und die Conjugation der Infusorien.

Band 11, Heft 1. *O. Böttger.*—Die Reptilien und Amphibien von Madagascar. *N. Leiberkühn und J. Bermann.*—Ueber Resorption der Knochensubstanz.

Göttingen. Göttingische Gelehrte Anzeigen,—Stück 45—47; Nachrichten, Nos. 23—24.

London. The Athenæum,—Nos. 2612-15, 1877.

———. The Institution of Civil Engineers,—Proceedings, Vol. L, Pt. 4, 1876-77.

G. Hayeroft.—On an Economical Method of manufacturing "Charcoal for Gunpowder". *H. Bell.*—The Rajpootana (State) Railway. *G. W. Vyse.*—River training of the Indus at Shah Jamal. *H. F. Blunford.*—Note on the Variation of the Barometric Tides in Connection with Diurnal Land and Sea Breezes.

———. The Linnean Society, Journal,—Botany, Vol. 15, Nos. 85—88; Vol. 16, Nos. 89—92.

Vol. 15, No. 85. *J. G. Baker.*—Revision of the Genera and Species of *Anthericeæ* and *Eriopermeæ*.

No. 87. *S. H. Vines.*—On the Digestive Ferment of *Nepenthes*. *Dr. Kirk.*—Note on specimens of *Hibiscus* allied to *H. rosa sinensis*, L. collected in E. Tropical Africa. With remarks by Prof. Oliver.

Vol. 16, Nos. 90 and 91. *J. G. Baker.*—Systema Iridacearum.

———. ———. Zoology, Vol. 12, No. 64, and Vol. 13, Nos. 65—71.

Vol. 12, No. 64. *Dr. J. Anderson.*—Note on the Plastron of the Gangetic Mud-Turtle (*Emyda dura* of Buchanan Hamilton). *Day.*—On the Introduction of Trout and Tench into India. On some of the Fishes of the Deccan. *Dr. J. Anderson.*—Note on *Arctomys dichrous*.

Vol. 13, No. 65. *R. Bowdler Sharpe.*—On the Geographical Distribution of the *Accipitres*. *T. Spencer Cobbold.*—Trematode Parasites from the Dolphins of the Ganges, *Platanista Gangetica* and *Orcella brevirostris*.

No. 67. *A. G. Butler.*—Descriptions of two New Lepidopterous Insects from Malacca. *Dr. F. Day.*—Geographical Distribution of Indian Freshwater Fishes. Part 1. The *Acanthopterygii*, Spiny-rayed Teleostean Fishes. *R. Bowdler Sharpe.*—Description of a New Hornbill from the Island of Panay. *Dr. J. Anderson.*—On the Habits of Hornbills. *Dr. Sharp.*—Observations on the Respiratory Action of the carnivorous Water-Beetles (*Dytiscidae*).

No. 68. *A. G. Butler.*—The Butterflies of Malacca. *F. Day.*—On Amphibious and Migratory Fishes of Asia.

- No. 70. *Edgar A. Smith*.—Description of *Acantharachna mirabilis*, a new form of *Ophiurida*. *F. Day*.—Geographical Distribution of Indian Freshwater Fishes. Part 2. The *Sihurida*.

London. The Linnean Society,—Transactions,—Botany, 2nd Series, Vol. 1, Pt. 4; Zoology, Vol. 1, Pt. 4.

- Zool. Vol. 1, Pt. 4. *J. O. Westwood*.—A Monograph of the Lepidopterous Genus *Castnia* and some allied groups. *Dr. J. Anderson*.—On the Osteology and Pterylosis of the Spoon-billed Sandpiper. (*Euryornorhynchus pygmaeus*, Linn.)

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- No. 182. *G. and F. E. Hoggan*.—On the Minute Structure and Relationships of the Lymphatics of the Mammalian Skin, and on the Ultimate Distribution of Nerves to the Epidermis and Subepidermic Lymphatics. *J. Hopkinson*.—Refractive Indices of Glass. Electrostatic Capacity of Glass. *R. B. Clifton*.—On the difference of Potential produced by the contact of different substances. *J. Tyndall*.—Note on Dr. Burdon Sanderson's latest Views of Ferments and Germs. *Prof. James Thomson*.—Experimental Demonstration in respect to the Origin of Windings of Rivers in Alluvial Plains, and to the mode of Flow of Water round Bends of Pipes. *R. H. M. Bosanquet*.—On the Hindoo Division of the Octave, with some additions to the Theory of Systems of Higher Orders.

- No. 183. *H. Tomlinson*.—On the Increase in Resistance to the Passage of an Electric Current produced on certain wires by stretching.

———. Royal Astronomical Society,—Monthly Notices, Vol. 37, No. 9. Discovery of the Satellites of Mars.

———. Royal Geographical Society,—Proceedings, Vol. 21, No. 6, 1877.

- Wallace*.—Lecture on the Comparative Antiquity of Continents, as indicated by the Distribution of Living and Extinct Animals. *Marsh*.—Description of a Journey Overland to India, viâ Meshed, Herat, Candahar, and the Bolan Pass, 1872. *Cottam*.—Overland Route to China, viâ Assam, &c., across the Irrawaddi into Yunnan.

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- No. 1306. *Prof. Graham Bell*.—The Telephone.

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Palermo. La Società degli Spettroscopisti Italiani,—Memorie, Dispensa 10, Ottobre, 1877.

Paris. Journal Asiatique,—7me Série, Tome 9, No. 3; Tome 10, No. 1, 1877.

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PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL.
FOR FEBRUARY, 1878.

The Annual Meeting of the Asiatic Society was held on Wednesday, the 6th February, 1878, at 9 o'clock P. M.

The Hon'ble Sir E. C. BAYLEY, K. C. S. I., C. I. E., President, in the Chair.

According to the Bye-laws of the Society, the President ordered the voting papers to be distributed for the election of Officers and Members of Council for 1878, and appointed Messrs. R. B. Shaw and H. H. Locke, Scrutineers.

The President then called upon the Secretary to read the Annual Report.

ANNUAL REPORT FOR 1877.

The Council of the Asiatic Society, in submitting their usual Annual Report exhibiting the state of the Society's affairs during the year 1877, are glad to be able to state that the position of the Society is on the whole satisfactory, both as regards the state of its finances and the extent and variety of its publications.

During the year 1877 there has been an accession to the Society of 26 ordinary Members, while the losses by death (5), retirement (17), and removal (6) amount to 28. The number of ordinary Members at the close of the year was therefore 345, against 347 in 1876. Of the ordinary Members on the roll, 46 are absent from India, leaving 113 Resident, 163 non-Resident, 14 Foreign, and 9 Life Members, on the effective list.

The annexed Tabular Statement shews the fluctuations in the number of the ordinary Members during the last five years.

Year.	Paying.				Life.	Absent.	Total.
		Resident.	Non-Resident.	Foreign.		Non-paying.	
1873, ...	305	116	186	...	3	53	358
1874, ...	312	127	184	...	3	32	346
1875, ...	295	113	179	...	3	50	345
1876, ...	299	119	175	...	5	48	347
1877, ...	290	113	163	14	9	46	345

During the year 4 members have compounded for their subscriptions, and the compounding fees and entrance fees, amounting altogether to Rs. 1,650, have been duly funded in the Permanent Reserve Fund.

Dr. John Muir was elected an Honorary Member of the Society.

Of the deceased members whose loss the Society has to regret, the Hon'ble Maharājāh Ramanath Tagore, C. S. I., had been a Member of the Society for 40 years, during which period he served twice on the Council. His patriotic and enlightened efforts for the improvement of his countrymen will be long remembered.

Mr. J. Geoghegan had been 18 years a member of the Society, and had served 3 years on the Council, as well as having been a member of various Committees; the Council have to deplore that a career which gave so much promise of great usefulness, has been cut short so prematurely.

The other names in the Obituary are Colonel D. G. Robinson, R. E. Kumar Giris Chandra Siñha, and Babu Vrindavanachandra Mandala of Balasor.

Mr. Robert Swinhoe, F. R. S., the author of many valuable contributions relating to the mammals and birds of China, who died on the 20th October, had been a Corresponding Member of the Society since 1860.

Indian Museum.

During the past year the Council have received no presentations requiring to be transferred to the Indian Museum under the provisions of Act XXII of 1876.

In accordance with the provision of the above Act which, allots an additional Trustee to represent the interests of the Society, the Council appointed Mr. T. S. Isaac a Trustee on behalf of the Society.

The Hon'ble Sir E. C. Bayley, K. C., S. I. (*President*), Dr. T. R. Lewis, Captain J. Waterhouse and Mr. H. Blochmann have continued to act as Trustees on behalf of the Society throughout the year.

Finance.

The Council have to observe that though the actual financial condition of the Society is perfectly sound and prosperous, the income of the past year shows a falling off owing to the reduction of subscriptions, and was less than the expenditure, by Rs. 854-15-11.

The circumstances of the year were rather exceptional, but the Council believe that with care the reduced income will be found sufficient to meet the ordinary expenses of the Society, and their anxious attention will be given to this object during the current year.

It is somewhat difficult, however, to ascertain the exact financial position of the Society at present, because during the past year a great deal of extraordinary expense was incurred on account of Repairs to the Building and Furniture, &c., and it is not always easy to estimate the amounts to be charged against ordinary or extraordinary expenditure.

After all liabilities on account of the repairs &c. had been met, there remained Government Securities amounting to Rs. 1,36,000. Of this sum Rs. 1,26,700 have been transferred to the Permanent Reserve Fund, under Rule 67, and will yield an income of Rs. 6,836-8 annually till the expiry of the $5\frac{1}{2}$ per cent. loan.

The balance, amounting to Rs. 9,300, has been kept in the Temporary Reserve Fund, and is available to meet any extraordinary expenses beyond the limits of the regular annual income, though care must be taken in regulating such expenditure out of the capital of the Society. The interest accruing from this part of the Society's vested Funds will amount to Rs. 511 annually, and, allowing for the probable sale of Rs. 2000 during the year, on account of the publication of Mr. Moore's papers and the preparation and publication of the new Library Catalogue, the total income derivable from these funds for the year may be set down at Rs. 7,200, or Rs. 600 a month.

The gross receipts of the Society during the year amount, as shewn in the table below, to Rs. 41,346-11-1 and the gross expenditure to Rs. 38,651-13-10.

This latter sum includes the following items of extraordinary expenditure: under *Publications*, Rs. 571-6-10, remitted to England in advance for the publication of Mr. Moore's papers on Indian Lepidoptera; under *Library*, Rs. 935-3-1, for the new Catalogues and MSS; under "*Refund of Loan*," Rs. 2,000 repaid to the O. P. and Conservation of Sanskrit MSS. Funds; under *Furniture and Building*, Rs. 15,695-12-0. The total of these items amounts to Rs. 19,202-5-11, which was partly met by the sale of Government Securities for Rs. 17,000.

The income of the Society shows a falling off during the past year, chiefly in the receipts from subscriptions, which amount to Rs. 7,200

against Rs. 9,009 for the previous year ; this, however, was to be expected in consequence of the reduction of the quarterly subscriptions of resident members from Rs. 12 to 9 : the actual loss on this head amounts to Rs. 1,272.

The receipts from admission and compounding fees were Rs. 880 and Rs. 770 respectively, but as these sums are funded they cannot be considered part of the *income* of the Society, and have consequently been omitted from the table showing the net income of the Society. These items were included in the estimate of 'income' for 1877.

The outstandings due to the Society for admission-fees, subscriptions, and sale of publications have, the Council regret to report, increased during the year from Rs. 6,270 to Rs. 7,074-5-5, the greater portion of which is irrecoverable, and will have to be written off to profit and loss. The arrears for subscriptions from Members only, are Rs. 5,874-14, upon which a reduction of Rs. 400 has been effected during the year.

The following is a Statement of the Cash Assets of the Society at the close of 1877.

Permanent Vested Fund,	...	...	Rs. 1,26,700	0	0
Temporary do.,	...	...	...	9,300	0 0
Balance in Bank of Bengal,	...	...	...	2,968	2 1
Cash in hand,	...	...	...	156	14 7
			<hr/>		
			Total Rs. ...	1,39,125	0 8

The following tables will show the Gross Receipts and Expenditure of the Society as compared with the previous year, and also the Net Income and Ordinary Expenditure.

GROSS RECEIPTS.

			1876.	1877.
Balance of 1875,	...	Rs.	3,206 6 5	3,432 3 5
Admission Fees,	...	...	800 0 0	880 0 0
Subscriptions, ...	...	...	9,009 1 9	7,200 2 0
Publications, ...	...	...	1,535 8 0	1,633 5 0
Library, ...	...	...	312 9 6	227 5 0
Fines, &c., ...	...	...	60 8 3	47 7 9
Received from Government,...	...	...	1,50,000 0 0	0 0 0
Sale of Government Securities,	...	...	5,102 14 8	17,501 0 11
Interest on do.,...	...	...	8,573 0 0	7,583 0 0
Rent from Government,	...	...	1,920 0 0	0 0 0

Carried over, Rs. 1,80,520 0 7 38,504 8 1

			1876.			1877.		
	Brought over, Rs.	1,80,520	0	7		38,504	8	1
Coin Fund, ...	...	0	0	0		17	0	0
Loan from Fund <i>a/c</i>	...	1,040	7	6		1,000	0	0
Do. O. P. Fund,	...	1,086	5	9		0	0	0
Do. Cons. MSS.	...	1,000	0	0		0	0	0
Refund of postage,	...	995	5	9		1,033	11	0
Compounding Fees,	...	0	0	0		770	0	0
Contingent charges,	...	0	0	0		21	8	0

Total Rs. ... 1,84,642 3 7 41,346 11 1

GROSS EXPENDITURE.

			1876.			1877.		
Publications, ...	Rs.	8,893	14	6		8,194	15	5
Library (Purchase of Books, &c.,)	...	1,225	7	7		3,436	13	9
Do. Extra men for Catalogues,	...	0	0	0		935	3	0
Establishment, Library, ...	...	1,936	0	0		1,800	0	0
Do. Secretary's office,	...	2,055	8	0		2,191	0	0
Secretary's office, contingencies,	...	1,020	0	0		1,452	15	8
Purchase of Government Securities,	...	1,50,940	10	2		0	0	0
Sale of Government Securities,	...	0	0	0		78	8	1
Interest of ditto, ...	...	21	6	8		18	15	2
Coin Fund, ...	...	81	13	0		221	10	0
Furniture, &c., ...	...	2,361	14	0		8,125	15	6
Building, ...	...	9,177	10	0		7,569	13	6
Taxes, ...	...	861	13	6		750	0	0
Loan from Fund <i>a/c</i>	...	1,130	0	0		800	0	0
Ditto from O. P. Fund <i>a/c</i> ...	...	86	5	9		1,000	0	0
Cons. of Sans. MSS. <i>a/c</i> ...	...	0	0	0		1,000	0	0
Refund of postage, ...	...	1,417	9	0		1,075	15	9

Rs. ... 1,81,210 0 2 38,651 13 10
Balance ... 3,432 3 5 2,694 13 3

Rs. ... 1,84,642 3 7 41,346 11 1

NET INCOME.

			1876.			1877.		
Subscriptions,	Rs.	9,009	1	9	Rs.	7,200	2	0
Publications, ... ..	...	1,535	8	0	...	1,633	5	0
Library, ... ..	...	312	9	6	...	227	5	0
Fines, &c., ... ..	...	60	8	3	...	47	7	9
Rent from Government, ... ..	...	1,920	0	0	...	0	0	0
Interest, ... ..	...	8,573	0	0	...	7,583	0	0
Coin Fund, ... ..	...	0	0	0	...	17	0	0
Refund of postage, ... ..	...	995	5	9	...	1,033	11	0
Contingent charges, ... ..	...	0	0	0	...	21	8	0
		Rs.	22,406	1	3	17,763	6	9

ORDINARY EXPENDITURE.

Publications,	Rs.	8,893	14	6	Rs.	7,623	8	7
Library, ... ..	...	1,225	7	7	...	3,436	13	3
Establishment, Library, ... ..	...	1,936	0	0	...	1,800	0	0
Do. Secretary's office, ... ..	...	2,055	8	0	...	2,191	0	0
Interest, ... ..	...	21	6	8	...	18	15	2
Contingent charges, ... ..	...	1,020	0	0	...	1,452	15	8
Coin Fund, ... ..	...	81	13	0	...	221	10	0
Taxes, ... ..	...	861	13	6	...	750	0	0
Refund of postage, ... ..	...	917	9	0	...	1,075	15	9
		Rs.	17,013	8	3	18,570	14	5

The following is the Estimate for Income and Expenditure for 1878.

INCOME.

Balance in hand,	...	...	...	Rs.	2,694	0	0
Subscriptions,	...	...	...	...	7,200	0	0
Publications }	...	...	...	...	1,800	0	0
Library, }	...	...	...	...	1,800	0	0
Interest from Vested Funds,	...	...	...	...	7,250	0	0
					<hr/>		
				Rs.	18,944	0	0

EXPENDITURE.

Publications,	Rs. 7,400 0 0
Establishment, Library,	1,800 0 0
Do. Secretary's office,	2,200 0 0
Contingencies and petty charges,	2,294 0 0
Building,	500 0 0
Furniture,	500 0 0
Coin Fund,	500 0 0
Library,	3,000 0 0
Taxes,	750 0 0
	<hr/>
	Rs. 18,944 0 0

The cost of the publication of Part I of Mr. Moore's papers on Mr. Atkinson's *Lepidoptera* and of the new Library Catalogues will have to be met from vested funds.

The London Agency.

Messrs. Trübner and Co.'s half yearly statement of accounts with the Society (1st July 1876 to 1st January 1877) shewed a balance of £118-2-10½ *d.* due from the Society, which on subsequent examination was reduced to £108-16 and duly remitted to Messrs. Trübner and Co.

According to Messrs. Trübner and Co.'s statement, the sale of the Society's publications from 1st July 1876 to 1st January 1877, amounted to Rs. 246 and that of the Bibliotheca Indica publications to Rs. 78-12-0. This sum, representing £26-8, was placed to the credit of the Society and O. P. Fund respectively.

Ten Invoices, consisting of publications of scientific Societies, presented to and subscribed for by the Society, books purchased and books on inspection, were received from Messrs. Trübner and Co. during 1877. The money value of these consignments amounted to £167-18-9, from which the sum of £8-11 has to be deducted for the value of books returned, leaving a balance of £159-7-9. 156 copies of both parts of the Journal, and 192 copies of the Proceedings were despatched to Messrs. Trübner and Co. for sale; representing respectively a money value of £28-12 and £10-8. Of the Bibliotheca Indica publications 864 copies, valued at Rs. 771-0 were sent for sale.

Library.

The additions to the Library during the year comprise in all 1,235 vols. and parts of vols. Of these 658 were received as presentations from Government, from Authors and by exchange, and 577 were added by purchase, which is considerably in excess of the additions made in the same way to the Library in past years.

As it was found that the Catalogue of the Library prepared by the

late Assistant Secretary was very imperfect, steps were taken to prepare an entirely new one, and for this purpose the Council sanctioned the employment of Mr. S. D'Cruze, who, with the Assistant Secretary, under Mr. Blochmann's close supervision, has made great progress in cataloguing and arranging the Library, and it is hoped that the new Catalogue may be ready for publication during the current year, and this long-felt want supplied.

Reference was made in the last report to the progress made in preparing an analytical Catalogue of the Sanskrit MSS. in the Society's Library. Owing to the repairs of the house, much interruption was caused to this work during the past year, and the Pundit employed on it could examine and catalogue only 200 MSS. The Pundit has also compiled Indices of works in the following branches of Sanskrit Literature, to be appended to Catalogues hereafter to be published:—Kosha, Kāvya, Ch'hando, Alankāra, Jyotisha, Vaidyaka. In the meanwhile Dr. R. Mitra carried through the Press the first part of the work, comprising detailed notices of all the works on Sanskrit Grammar available in the Library. Annexed to this volume is a list of all works on the subject known to exist.

The Council are glad to announce that considerable progress has also been made in the printing of Dr. Mitra's analysis of the valuable collection of Sanskrit Buddhist MSS. presented to the Society by Mr. B. H. Hodgson.

The Books and Book-cases in the Library have been properly arranged and numbered.

The Photographic collection has received the following additions, both presented by the Home Department of the Government of India.

1. A set of Photographs of the paintings at the Ajanta Caves.
2. A set of Photographs of the Kantanagar Temple in Dinājpur.

Publications.

The Publications of the Society issued during the year compare favourably with those of former years, and comprise 10 numbers of the Proceedings consisting of 274 pages of text, with 3 plates. The Meteorological Observations, hitherto issued from the Surveyor General's Office, have been discontinued from March, and do not therefore appear in the Proceedings from that month.

Four numbers of the Journal, Part I, have been issued, containing 468 pages of text, illustrated by 13 Plates. Of Journal Part II, 3 numbers have also been issued, consisting of 314 pages of text illustrated by 1 plate. The fourth number is in preparation and will be issued soon.

The Council have made arrangements for publishing the descriptions by Messrs. Moore and Hewitson of the new species of Indian *Lepidoptera* in the collections of the late Mr. W. S. Atkinson. They will be in three parts, quarto form, similar to the transactions of the Zoological Society

and will be illustrated by 9 plates. Orders have been given for printing 525 copies, of which 200 will have coloured plates. It is proposed to give each member of the Society a copy of the work with plain plates, but those members who wish to have copies with the plates coloured will be able to obtain them by paying the additional cost of colouring, estimated at about Rs. 10 per copy.

Building.

The amount spent up to 31st December 1876 on account of "Repairs and Alterations" and for "Furniture and Fittings," was Rs. 11,561-14. During 1877, a further sum of Rs. 7,569-13-6 was paid to Messrs. Mackintosh, Burn and Co. in full of their bill for repairs and alterations, and Rs. 8,125-15-6 was expended in purchasing furniture for the Society's public rooms, book-cases for the Library, and for restoring the pictures and picture frames of the Society's collection of paintings. The total amount, therefore, spent during 1876-77 in the improvement of the Society's property amounts to Rs. 27,257-11. It is anticipated that no further outlay on these heads will be required for some time to come.

With reference to the new railing it was intended to erect along the Park Street front of the premises, the Council have to report that nothing has as yet been decided upon. During the year negotiations were opened with the Municipality, who were desirous of obtaining a portion of the Society's ground to improve the approach to Park Street, in return for which they were to share the expense of erecting a handsome railing. The negotiations, however, fell through. A statement of the case was submitted to the Society by the Council, at the December meeting.

Coin Cabinet.

To the Coin Cabinet of the Society have been added during the year, 7 gold coins, acquired by purchase, and 12 copper coins presented to the Society by Babu Jogesh Chunder Dutt.

Secretary's Office.

Mr. Blochmann, the Philological Secretary, has throughout the year retained charge of Part I of the Journal. Mr. Wood-Mason retained the Natural History Secretaryship till July, when he proceeded to England. For the remainder of the year Mr. W. T. Blanford and Captain Waterhouse have superintended the publication of Part II of the Journal.

The duties of the General Secretaryship and editing of the Proceedings were performed by Capt. Waterhouse, except for the month of January when Mr. Blochmann took temporary charge. Mr. H. B. Medlicott has retained charge of the Treasurership throughout the year.

The Asst. Secretary, Mr. Leonard, has continued to give satisfaction by the diligent and zealous discharge of his duties. The Asst. Librarian, Maulawí Ghulám Akbar, was dismissed for incompetence and Mr. Andrews was engaged in his place. Mr. Andrews has given satisfaction. Bábus Kedarnath Bysack, Cashier, Ramjibun Mookerjea, Asst.-Cashier, and Jadu Bindo Bysack, Storekeeper, have continued to perform their duties diligently.

Bibliotheca Indica.

A. *Arabic and Persian Series.*

In the Arabic and Persian Series, eleven fasciculi were issued during the year, *viz.*, 2 Arabic, and 9 Persian.

Of the *Iqábat*, or 'Biographical Dictionary of Muhammad,' by Ibn Hajar 'Askalání, Maulawí 'Abdul-Hai, Head-Professor of the Calcutta Madrasah, has issued two fasciculi.

Mr. Blochmann has issued three quarto fasciculi of the Persian text of the *Áín-i-Akbarí*. The work, which was commenced in 1868, is now complete. It consists of two volumes of nearly 1100 quarto pages, two geographical indexes, an index of Hindí scientific terms, a biography of Abul-Fazl, and a Preface containing the necessary information regarding the 15 MSS. from which Mr. Blochmann collated the text, and the style and the writings of the author. The Government of India, with its usual liberality, had made a special grant of Rs. 5000 towards the cost of printing.

Maulawí 'Abdur-Rahím, of the Calcutta Madrasah, issued during 1877 six fasciculi of Abul-Fazl's *AKBARNÁMAH*. The text of the first volume of this work, which contains the history of Akbar's predecessors, is now finished. Of the second volume, two more fasciculi have been printed, which bring the history of Akbar's reign to 970 (A. D. 1563). An index to Vol. I, of names of persons and of geographical places, is in course of preparation, and will be issued during the present year.

B. *Sanskrit Series.*

In the Sanskrit series altogether twenty fasciculi were issued during the past year. With a view to complete without delay some of the larger works on hand, no new work was undertaken. Of the largest work on hand, the *Sáma Veda Sañhitá*, six fasciculi have been published, completing the fourth volume. Another volume, it is expected, will bring this elaborate and important work to a close. This work, supplemented by the *Bráhmaṇas*, so critically edited by Dr. Burnell of Madras, will place the whole of the *Sáma Veda*, held by the Hindus as the most ancient and most sacred text of their scriptures, within easy reach of oriental scholars.

The Agni Purāṇa which forms a sort of Cyclopædia of Sanskrit learning, is also in a forward state, and two fasciculi more will complete the work. Three Nos. were brought out by the editor, Dr. Rājendralāla Mitra, during the past year. This will be followed by an edition of the Vāyu Purāṇa simultaneously with an English translation by the same editor. The translation will appear under the auspices of the Oxford University authorities.

Paṇḍit Bharatachandra Śiromaṇi has brought out six fasciculi of his edition of the Vrata Khaṇḍa of Hemādri. The work is a digest of all rules and ordinances of ancient Hindu sages regarding fasts and penances. The quotations given in it are numerous, and of great interest with reference to the dates of the writers quoted.

Vāchaspati Miśra's gloss on the Vedānta Sūtras of Vyāsa, which was undertaken two years ago by Professor Bāla Śāstrī of Benares, has advanced by two Nos., and the Mīmāṃsā Aphorisms by one. Both these works will require some time yet before they are completed.

The progress made in the printing of Gobhila's Aphorisms on the domestic rites enjoined in the Sāma Veda, has also been slow, only one fasciculus having appeared during the past year. But that task has nearly been completed, and will be brought to a close in course of the current year. By way of appendices to the text, the editor proposes to print the Supplementary Aphorisms by the son of Gobhila, as also the Snāna and the Sandhyā Sūtras. The whole of these will not take up more than one fasciculus.

The Council have great satisfaction in announcing that Dr. Rājendralāla Mitra has at last completed his edition of the Lalita Vistara. The work was undertaken several years ago, and five fasciculi were published; but after that, owing to one cause or another, it had to be set aside from time to time. Annexed to the last fasciculus is an Introduction in which the editor has given a detailed account of the language, history, date and contents of the work, which will not fail to prove interesting to oriental scholars.

The following is a detailed list of the Bibliotheca Indica Publications issued during 1877—

A. Arabic and Persian.

AKBARNĀMAH, by Abul-Fazl-i-Mubārak-i-'Allāmī, edited by Maulawī 'Abdur-Rahīm, Calcutta Madrasah. Nos. 362 and 363, 374 and 375, Vol. I, Fasc. V to VIII; Nos. 379 and 380, Vol. II, Fasc. II.

A'IN-I-AKBARĪ, by Abul-Fazl-i-Mubārak-i-'Allāmī, edited by H. Blochmann, M. A. Vol. II, Nos. 370, 378, 387, Fasc. XX, XXI, XXII.

IḤĀBAH, or 'Biographical Dictionary of Persons who knew Muhammad,' by Ibn Hajar 'Askalānī, edited by Maulawī 'Abdul-Hai, Calcutta Madrasah, Old Series, Nos. 238, 240, Vol. II, Fasc. XVI, XVII.

B. Sanskrit Series.

SÁMA VEDA SAÑHITÁ, with the commentary of Sáyana Áchárya, edited by Paṇḍita Satyavrata Sámasramí, Nos. 356, 361, 365, 366, 369, 371, Vol. IV, Fasc. I to VI.

AGNI PURÁṆA, a system of Hindu Mythology and Tradition, edited by Rái Rájendralála Mitra, Bahádur, LL. D. Nos. 357, 373, 390, Fasc. IX to XI.

CHATURVARGA CHINTÁMAṆI, by Hemádri, edited by Paṇḍita Bharatachandra Śiromaṇi, Nos. 360, 367, 372, 377, 381, 386, Vol. II, Fasc. VII to XII.

BHÁMATÍ, a gloss on Śaṅkara Áchárya's commentary on the Brahma Sūtras, by Váśhaspati Mísra, edited by Paṇḍita Bála Śástrí. Nos. 364, 384, Fasc. IV and V.

MÍMÁṆSÁ DARSANA, with the commentary of Savara Svámí, edited by Paṇḍita Mahesachandra Nyáyaratna. No. 368, Fasc. XIII.

GOBHILÁYA GRHÝA SUTRA, with a commentary by the editor, edited by Chandrakánta Tarkálankára, No. 383, Fasc. VII.

LALITA VISTARA, edited with an introduction by Rái Rájendralála Mitra, Bahádur, LL. D., No. 237, o. s. Fasc. VI.

List of Societies and Institutions with which Exchanges of Publications have been made during 1877.

- Agra :—Agra Asiatic Society.
 Batavia :—Batavian Society of Arts and Sciences.
 Birmingham :—Institution of Mechanical Engineers.
 Bombay :—Bombay Branch, Royal Asiatic Society.
 ——— :—Editor, Indian Antiquary.
 Boston :—Natural History Society.
 Bordeaux :—Bordeaux Academy.
 Buenos Ayres :—Public Museum.
 Brussels :—Royal Academy of Sciences.
 ——— :—Geological Society of Belgium.
 Cherbourg :—Natural Society of Natural Science.
 Calcutta :—Agricultural and Horticultural Society of India.
 ——— :—Geological Survey of India.
 Christiania :—University Library.
 Copenhagen :—Royal Society of Northern Antiquaries.
 Cambridge :—University Library.
 Colombo :—Asiatic Society, Ceylon Branch.

- California :—Californian Academy of Arts and Sciences.
Dacca :—Editor, Bengal Times.
Dehra-Dun :—Great Trigonometrical Survey.
Dublin :—Royal Irish Academy.
—— :—Natural History Society.
Edinburgh :—Royal Society.
Frankfort :—Natural History Society.
Geneva :—Physical and Natural History Society.
Genoa :—Museum of Natural History.
Königsberg :—Physical and Economical Institution.
Lahore :—Agricultural Society of the Panjab.
Leipzig :—German Oriental Society.
Liège :—Royal Society of Sciences.
Leyden :—Royal Herbarium.
Liverpool :—Literary and Philosophical Society.
London :—Royal Society.
—— :—British Museum.
—— :—Royal Asiatic Society of Great Britain and Ireland.
—— :—Royal Institution.
—— :—London Institution of Civil Engineers.
—— :—Royal Geographical Society.
—— :—Museum of Practical Geology.
—— :—Zoological Society.
—— :—Statistical Society.
—— :—Geological Society.
—— :—Linnean Society.
—— :—Anthropological Institute.
—— :—Royal Astronomical Society.
—— :—Editor, Athenæum.
—— :—Editor, Geographical Magazine.
—— :—Editor, Nature.
Lyon :—Agricultural Society.
Moscow :—Society of Naturalists.
Madras :—Government Central Museum.
—— :—Literary Society.
Manchester :—Literary and Philosophical Society.
Munich :—Royal Academy.
Netherlands :—Royal Society.
New Haven, U. S. :—Connecticut Academy of Arts and Sciences.
Oxford :—Bodleian Library.
Paris :—Imperial Library.
—— :—Anthropological Society.

- Paris :—Asiatic Society.
 — :—Geographical Society.
 — :—Ethnological Society.
 — :—Zoological Society.
 Pisa :—Tuscan Society of Natural Sciences.
 Stettin :—Entomological Society.
 Stuttgart :—Natural History Society of Wurtemberg.
 St. Petersburg :—Imperial Library.
 — :—Imperial Academy of Sciences.
 — :—Imperial Russian Geographical Society.
 Stockholm :—Royal Academy of Sciences.
 Switzerland :—Entomological Society.
 Trieste :—Academy.
 United States, America :—Geological Survey of the Territories.
 Vienna :—Imperial Geological Institute.
 — :—Anthropological Society.
 — :—Imperial Academy of Sciences.
 — :—Zoological Society.
 Washington :—Smithsonian Institution.
 — :—Commissioners of the Department of Agriculture.
 Yokohama :—German Oriental Society.
 — :—Asiatic Society of Japan.
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ABSTRACT OF PROCEEDINGS OF THE COUNCIL DURING 1877.

January 15th. Ordinary Meeting.

A proposal from the President of the Société Belge de Géographie for an exchange of publications with the Society was declined.

An exchange of publications with the Société Zoologique de France was sanctioned.

The continued payment to Islam Khan of his pension of Rs. 3 per mensem during 1877 was sanctioned.

At the request of Dr. Rájendralála Mitra, a sum of Rs. 500 was sanctioned for the purchase of 2 large book-cases for the accommodation of the Society's MSS. Library.

An estimate, amounting to Rs. 1548-7, from Messrs. Mackintosh, Burn and Co., for the erection of godowns was accepted.

February 1st. Ordinary Meeting.

The Secretary submitted a letter from T. W. Gribble, Esq., Post Master General of Bengal, asking whether the Council would have any objec-

tion to the erection of a small Government Post-Office, on a piece of their waste ground, and reported that the Finance Committee recommend the acceptance of Mr. Gribble's offer.

The letter was circulated to Members of the Council for an expression of opinion.

A request from Dr. F. Kielhorn, of Poona, for the loan of a MS. from the Society's collection, to assist him in preparing a critical edition of the Mahabhashya, was granted.

March 1st. Ordinary Meeting.

A letter was read from T. W. Gribble, Esq., Post Master General of Bengal, stating, in reply to the Society's letter No. 62, dated 13th February, 1877, that the Director General of Post-Offices in India had authorized him to offer Rs. 100 a month for the use of the Post-Office it was proposed to erect on a waste piece of the Society's ground.

The Secretary was requested to ascertain the cost of a building such as required by the Post Office, and to inquire whether the Post-Office would take it on a repairing lease for 14 or 21 years.

A letter was read from V. Sresnevesky, Esq., Secretary of the Imperial Russian Geographical Society, St. Petersburg, accepting the proposed exchange of publications with the Society.

The publications of the Society were ordered to be sent from 1870.

The Secretary reported that under the Museum Act, 22 of 1876, another Trustee on behalf of the Society had to be appointed.

Mr. T. S. Isaac was asked to accept the post.

The Minutes of the Society's Trustees of the Indian Museum on the state of the Zoological and Ethnological collections made over by the Asiatic Society to the Indian Museum were read, and a letter ordered to be addressed to the Government on the subject.

The Minutes of the Members of the Natural History Committee on a proposal from Mr. Grote regarding the publications of descriptions of a portion of the entomological Collections left by the late Mr. W. S. Atkinson were read, and it was agreed to publish an extra number of the Journal containing descriptions of the collection, and that the cost of coloured plates should be ascertained.

March 29th. Ordinary Meeting.

A letter was read from the Officiating Post Master General of Bengal, in reply to the Society's letter No. 140, dated 6th March 1877, stating that the rough plan of the Post Office submitted would suit, and that there was no objection to a long repairing lease on the terms proposed: but asking for a detailed plan of the building in order to specify certain small internal fittings.

It was ordered that the Officiating Post Master General of Bengal should be informed that the Council consider it undesirable to erect any such building in the Society's compound.

Dr. D. B. Smith, having resigned his seat in the Council, it was ordered that Mr. C. H. Tawney be asked to rejoin the Council.

A letter was read from the Secretary to the Government of the N. W. Provinces, stating that the N. W. Provinces Government was unable to undertake the publication of Beal's Oriental Biographical Dictionary, but was willing to make over the copyright to the Society or any other publisher, and assist pecuniarily as far as possible.

It was ordered that the N. W. Provinces Government be asked to send down the MS. in order to ascertain the cost of publication.

An exchange of publications with the "Zeitschrift der Osterreichischen Gesellschaft für Meteorologie," and the "Jahrbuch" of the same Society was declined, but these publications were ordered to be subscribed for.

The Secretary reported that the Finance Committee recommend the selling of Rs. 1,000 of Government Securities, to meet current expenses, which was sanctioned.

The Secretary suggested that if a strip of ground along the Park Street side of the Society's compound were offered to the Municipality for the purpose of widening the street, the Municipality might perhaps help the Society to put up the railing and bear part of the cost.

This question was deferred till the next Meeting.

April 26th. Ordinary Meeting.

An exchange of publications was sanctioned with the "Indian Mirror" Newspaper.

The question of giving the Municipality a piece of ground along Park Street, in return for their paying the whole or part of the expense for erecting the railing along Park Street, was again brought up, and deferred, pending a survey by the Municipality of the ground in question.

A recommendation by the Finance Committee that a further probation of 6 months be allowed to Bábu Kedarnath Bysack the Cashier, was approved.

The selling out of Government Securities for Rs. 8,000 to meet expenses of repairs, recommended by the Finance Committee, was sanctioned.

The minutes of the Council on a memorandum from the Secretary regarding the building of a Post-Office, were read, and the former decision of the Council ordered to be confirmed.

Colonel J. F. Tennant, R. E., was elected a member of the Council, in place of Dr. D. B. Smith.

May 31st. Ordinary Meeting.

Letters were read from the Under Secretary to the Government of India, Department of Revenue, Agriculture and Commerce, forwarding letters from the Government of India, Military (Marine) Department regarding Deep-Sea Dredging fittings; and from the Deputy Master Attendant on the same subject.

It was ordered that the Under Secretary to the Government of India, Department of Revenue, Agriculture and Commerce, be informed that the question had been referred to a Sub-Committee who would communicate direct with the Superintendent of the Dockyard and report to the Council. The Sub-Committee to be composed of Messrs. W. T. Blanford, H. B. Medlicott, J. Wood-Mason, H. F. Blanford and Dr. J. Anderson.

The Secretary reported that the Library Committee had made the following recommendations:

That the original copy of "Jerdon's Birds of India," should not be lent out to Members, when a copy of Major Godwin-Austen's reprint had been procured.

That no more than two MSS. be lent out at the same time to one person without sanction of the Council.

That a special assistant be appointed to compile the Catalogue under Mr. Blochmann's supervision.

These proposals were sanctioned.

A recommendation by the Finance Committee that a further sum of Rs. 4000 of Government Securities should be sold out to meet claims on the Society, and repay the debt to the O. P. and Cons. Sans. MSS. Funds, was sanctioned.

The Secretary submitted a letter from M. Leroux of Paris, requesting to be appointed the Society's Paris Agent.

M. Leroux was ordered to be informed that he could not be appointed Agent, but that books would be supplied him at special rates.

An official form for the registration of the Society's property under Act VII, (B. C.) of 1876, was submitted by the Secretary, and it was ordered that Mr. J. O'Kinealy and the Collector of Calcutta should be consulted and a report made at the next meeting.

Mr. Blochmann reported that the publication of Mr. Beal's Biographical Dictionary was estimated at Rs. 4000. It was ordered that the Government of the N. W. Provinces should be informed of the cost of the work and requested to give a grant-in-aid of Rs. 1500, for which they would receive an equivalent number of copies when published. It was ordered that if the grant was sanctioned the work should be printed in the Bibliotheca Indica.

The Natural History Secretary reported, with reference to Mr. Grote's proposal for the publication of a portion of the late Mr. Atkinson's collection of *Lepidoptera*, that the following Resolution had been passed by the Natural History Committee :

"The Natural History Committee are unanimously of opinion, that is desirable, if practicable, that Mr. F. Moore's descriptions of the new species of moths from the collection of the late Mr. Atkinson should be published by the Society, but they do not consider it necessary that the whole should be printed in one piece, and brought out in England, as an extra number of the *Journal*. They recommend that the work be published in sections as the Society's funds may permit, either as a series of papers to be communicated in the usual way to the *Journal*, or as separate fasciculi of a new series of the "*Asiatic Researches*" in quarto form.

The Council agreed to publish the descriptions as a separate work in quarto form in numbers as their funds permitted. The printing to be done, in Calcutta, and proofs sent to Mr. Moore. The plates to be done in England. The question of commencing a new series of the *Asiatic Researches* to be referred to the Council at large for consideration.

June 28th. Ordinary Meeting.

At this Meeting the question of the erection of a Railing was again deferred, till the ground had been marked out and a definite proposal brought forward by the Municipality.

The Secretary reported that steps had been taken to have the Society's landed property duly registered and to obtain a dispensation freeing successive Secretaries of the Society from the necessity of registering themselves on behalf of the Society.

The Minutes of the Council on the question of recommending a new series of the "*Asiatic Researches*," were read, and the following order passed :—That the new series of the "*Asiatic Researches*" be commenced, the size of the *Philosophical Transactions*. The quarto to be the same as the *Philosophical Transactions*, and 300 copies to be printed. £50 to be remitted to Mr. Grote.

The Natural History Secretary reported that the Sub-Committee for Deep-Sea Dredging, had recommended that application be made to Government for copies of all the Admiralty papers and publications relating to the equipment and fittings of the "*Challenger*," and for specimens of the apparatus to serve as models. The recommendation was approved.

The Secretary suggested that steps should be taken to secure the submission of papers before the General Meeting.

It was ordered that a notice should be printed on the cover of the *Proceedings*, that to ensure the reading of papers at the Monthly meeting

of the Society they should be sent to the Secretary at least a week beforehand.

July 25th. Ordinary Meeting.

A request from the Triplicane Society of Madras, asking to be supplied with the publications of the Society gratis, was declined.

A letter was read from the Assistant Secretary, asking for a room in the Society's House, which was sanctioned.

Dr. Rájendralála Mitra submitted a copy of a Catalogue of the Society's MSS. (Grammar) and proposed that the usual number of copies be sent to Government; that it be sold at Rs. 2 per copy; that copies be presented to all Institutes with which the Society exchange; that 20 copies be given to the author, and that the sale proceeds be applied to the publication of the subsequent volumes. These proposals were sanctioned.

August 30th. Ordinary Meeting.

The following gentlemen, proposed as Members of the Society at the last Monthly General Meeting, were duly elected by the Council under Rule 7.

Bábu Pratápa Narain Sīñha, Bábu Jñanendra Chandra Ghosha, Bábu Kedarnátha Datta, Captain H. W. Clarke, R. E.

A re-exchange of publications was sanctioned with the American Oriental Society.

The Minutes of the Council were read, on Mr. Grote's letter about the papers by Messrs. Moore and Hewitson, the Secretary reporting that he had not remitted to Mr. Grote the £50 ordered at the last meeting, from want of funds, and asking permission to sell out Government Securities for the amount required.

It was ordered that Mr. Grote be asked to kindly give an estimate of the number of quarto plates required to illustrate these papers to the same extent as the octavo plates already sanctioned, and the cost of drawing, printing and colouring 325 copies.

On the recommendation of the Finance Committee a sum of Rs. 1,500 was ordered to be sold out of Government Securities, to refund advances from current revenue, to meet charges for repairs, &c.

Dr. Rájendralála Mitra submitted specimen sheets of his Analysis of the Hodgson collection of Buddhist MSS. and stated that the publication would cost Rs. 1200.

It was ordered that the cost of publishing be defrayed out of the Conservation of Sanskrit MSS. Fund.

September 27th. Ordinary Meeting.

A proposal from the Municipality to purchase for Rs. 300 a piece of ground belonging to the Society and required to widen Park Street, was declined.

Under Rule 7, the Council elected the following gentlemen Members of the Society.

Mr. John Hart and Mr. J. Digges La Touch, C. S.

October 1st. Ordinary Meeting.

A request from Professor Henry, Secretary of the Smithsonian Institute, to be supplied with certain Journals and Proceedings wanting in his set, was complied with.

A recommendation of the Finance Committee that on account of the excessive expenditure of the O. P. Fund, measures should be taken to reduce expenses for a time, was agreed to, and the publications ordered to be stopped for three months.

Bábu Kedarnáth Bysack was confirmed in the post of Cashier to the Society.

Read the minutes of the Council on the expense of the printing and plates of the Atkinson Collection of *Lepidoptera*. It was ordered that the Society could not afford more than £300, including the printing. The number of copies may be reduced to 225, quarto size, including 25 authors' copies. The expenditure to be spread over three years—1877-78-79. The work to be printed in England; the plates to be headed—Asiatic Society of Bengal. The question whether the work is to form Part I of the Asiatic Researches is to be circulated to Council for re-consideration at the next meeting. Rs. 500 of Government Securities to be sold out and £50 to be remitted to Mr. Grote.

On the recommendation of the Finance Committee an addition of Rs. 5 per mensem to the pay of the Assistant Cashier was sanctioned, to be payable by the Society, the balance of his pay being paid by the O. P. Fund as at present.

November 30th. Ordinary Meeting.

On the recommendation of the Finance Committee a bill for Rs. 874-4, expended in the publication of a Catalogue *raisonné* of the Society's Sanskrit MSS., was charged to the Conservation of Sanskrit MSS. Fund, in accordance with Government orders on this subject.

The pay of Jussim, Durwan, was ordered to be increased from Rs. 6 to Rs. 7 a month.

The Secretary submitted an Index of 22 vols. of the Society's Journal, from vol. 24 of 1855 to vol. 45 of 1876, compiled by the Assistant Secretary, and it was ordered to be circulated to the Council with a specimen and a report by the Secretaries.

The Minutes of the Council upon the question of starting a new series of the Asiatic Researches were read ; and it was ordered, "That the papers by Messrs. Moore and Hewitson should be printed as an independent publication, and not as Vol. I of a new series of the Asiatic Researches. That a sufficient number of plain paper copies should be printed for circulation to Members of the Society, in addition to the colored copies ordered last meeting, and that Members be invited to say whether they wish to have colored copies, on paying the extra cost of the coloring, estimated at from 8 to 10 rupees.

The Minutes of the Council were read on the question of collecting the subscription of Mofussil Members annually, and it was ordered that the present system be continued.

December 30th. Ordinary Meeting.

Applications from the Secretary, Canadian Institute, Toronto, and from the Secretary to the Davenport Academy of Natural Sciences for an exchange of publications, were declined.

An exchange of publications with the Academy of Natural Sciences, Philadelphia, was sanctioned.

A petition from Islam Khan, praying for the continuance of his pension during 1878, was granted.

The Secretary reported that the Library Committee recommend the calling in of all books at present on loan with Members for the purpose of being incorporated in the new Catalogue ; which was sanctioned.

The Secretary reported that the Finance Committee recommend that the sum of Rs. 1,26,000 of Government Securities should now be transferred to the Permanent Reserve Fund. This sum includes Rs. 2,000 from admission and compounding fees funded before the receipt of Rs. 1,50,000 from Government, and Rs. 2,782-13-7 since received on the same account. Of the sum forming the Permanent Reserve Fund, Rs. 1,07,000 would be in 4 per cent. and the remaining in 5 per cent. The recommendation was sanctioned.

There was some delay in taking the votes for the election of officers and members of the Council for 1878, owing to a misapprehension caused by the note on the papers circulated to Resident members in the usual way

before the meeting, and to an objection raised by Dr. Waldie, to the officers being elected collectively, as usual, and not in due sequence, as laid down in rule 44. The Scrutineers finally reported the result of the election as follows :—

W. T. Blanford, Esq., F. R. S.,	<i>President.</i>
Dr. Rájendralála Mitra, Rai Bahadur, C. I. E.,	} <i>Vice-Presidents.</i>
H. B. Medlicott, Esq.,	
T. S. Isaac, Esq.,	
H. Blochmann, Esq., M. A.,	} <i>Secretaries.</i>
Capt. J. Waterhouse,	
R. Lydekker, Esq.,	
E. Gay, Esq.,	<i>Treasurer.</i>
W. T. Blanford, Esq., F. R. S.,	} <i>Members of Council.</i>
Dr. Rájendralála Mitra, Rai Bahádur, C. I. E.,	
H. B. Medlicott, Esq., M. A.,	
T. S. Isaac, Esq.,	
H. Blochmann, Esq., M. A.,	
Capt. J. Waterhouse,	
Dr. T. R. Lewis,	
J. O'Kinealy, Esq., C. S.,	
Bábu Prannáth Pandit,	
Dr. J. Anderson,	
R. Lydekker, Esq.,	
Col. J. T. Walker, C. B., R. E., F. R. S.,	
H. F. Blanford, Esq.,	
E. Gay, Esq., M. A.,	
A. W. Croft, Esq., M. A.	

Messrs. D. Waldie and J. Blackburn, were elected to audit the Annual Accounts.

The PRESIDENT said—That he regretted that his approaching departure from India and the pressure of business which it involved, prevented him from preparing any address on the occurrences of the past, such as was sometimes laid before them. So far as the affairs of the Society were concerned he could only refer the meeting to the report which had just been read and which he thought he might justly call satisfactory. His duty was now to vacate the chair in favour of Mr. Blanford. In doing so, he begged to express to the Society his sense of the high honor which they had done him in so often more than once electing him to office as President and as a Member of their Council. The duties of those offices he had

fulfilled to the best of his ability with much pleasure, and he could only regret that long periodical absences from Calcutta and the pressure of official duties had prevented his doing so more energetically. As it was, he could only express his sense of the kindness with which they had made allowance for his shortcomings. It was to himself a matter of pain to cease from personal action in the affairs of the Society, in which he took that deep interest which they so thoroughly deserved. It was possible indeed that greater leisure in the future might enable him to give more attention to various branches of the enquiries to which the Society devoted itself, and if he was able to do so and to make any observations which he thought of interest, he would gladly from time to time place them at the disposal of the Society of which he hoped always to remain a member.

There was one last motion which he would ask permission to make before leaving the chair. General Thuillier, who had so long and so usefully been connected with the Society, and to whom they were indebted, not only for his labours as their President and on the Council, but for much aid which his official capacity enabled him to render, was quitting India to-morrow morning. He would ask the Society to pass a vote of thanks to General Thuillier and an expression of regret at losing his active assistance. If this motion was carried it would, of course, be formally transmitted in due course by the Secretary, but there was no time for this to be done while General Thuillier was in the country. He begged therefore to be allowed to communicate the vote to General Thuillier personally, as he hoped to see him before his departure.

The vote was put and carried. The PRESIDENT then said that he begged now to vacate the chair to Mr. Blanford, whom, he felt confident, the Society would find worthy of the high honor they had conferred on him.

The Meeting was then resolved into the Ordinary Monthly General Meeting.

W. T. BLANFORD, Esq., F. R. S., President, in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced—

From Commander R. Dundas Taylor, a Chart of Narsapur Point and Palmyras Point. The Vizagapatam, Ganjam and Orissa Coasts, 1877, compiled by R. C. Carrington.

The following gentlemen, duly proposed and seconded at the last meeting, were balloted for and elected Ordinary Members.

Colonel the Hon'ble Sir Andrew Clarke, R. E., K. C. M. G., C. B., C. I. E.

The Hon'ble H. T. Prinsep.

The following are candidates for ballot at the next Meeting :—

1. W. M. Souttar, Esq., C. S., Magistrate and Collector of the Twenty-four Pergunnahs, proposed by the Hon'ble Sir E. C. Bayley, K. C. S. I., seconded by J. O'Kinealy, Esq.

2. James Wilson, Esq., C. S., Assistant Settlement Officer, Gurgáon, Punjáb, proposed by Denzil Ibbetson, Esq., seconded by A. G. Thomson, Esq.

3. A. Campbell, Esq., Officiating Deputy Commissioner, Goalpara, Assam, proposed by W. McGregor, Esq., seconded by Capt. J. Waterhouse.

4. H. G. Keene, Esq., C. S., District and Sessions Judge, Agra, proposed by H. Blochmann, Esq., seconded by Dr. Rájendralála Mitra.

5. Babu Adharlal Sen, B. A., proposed by Roper Lethbridge, Esq., C. I. E., seconded by Dr. Rájendralála Mitra, Rai Bahadur, C. I. E.

6. Surgeon-Major E. J. Gayer, M. D., Calcutta, proposed by Capt. J. Waterhouse, seconded by Dr. T. R. Lewis.

7. The Hon. H. A. Cockerell, C. S., Calcutta, proposed by H. H. Locke, Esq., seconded by Capt. J. Waterhouse.

8. G. W. Allen, Esq., proposed by W. T. Blanford, Esq., seconded by H. H. Locke, Esq.

9. W. Hoey, Esq., Asst. Commissioner, Unao, Oudh, proposed by Capt. J. Waterhouse, seconded by H. Blochmann, Esq.

The SECRETARY read the following report of the Stoliczka Memorial Committee, and laid before the meeting a statement of the English and Indian accounts.

Report of the Stoliczka Memorial Committee.

"The Stoliczka Memorial Committee have the pleasure to report that the marble bust of the late Dr. Stoliczka, by Mr. Geffowski, has been received from England, and is as good a likeness as could have been expected, considering the very difficult conditions under which the sculptor had to work, owing to the want of proper photographs.

"The portrait by Mr. Dickinson, (of which a photograph has been presented to every subscriber) was received in March last, and now hangs in the Society's Meeting-room.

"The Committee have examined the accounts, as annexed to this report, and find them correct.

"When all expenses have been paid there will remain a balance of Rs. 317-8-8, besides £2 in England. The Committee would recommend that the subscribers should be asked if they have any objection to this balance being added to the Asiatic Society's Servants' Charitable Pension Fund.

"The Committee have to warmly acknowledge the valuable services rendered by Mr. A. Grote, Dr. Oldham, Dr. Dobson and other members of the London Committee, and to tender their thanks for the great care and trouble these gentlemen have taken in carrying out the wishes of the subscribers.

STOLICZKA MEMORIAL FUND ACCOUNT.

India.

RECEIPTS.		EXPENDITURE.	
Subscriptions realised, ..Rs.	2,787 0 0	Remitted to Mr. Grote £200,	2,323 6 7
		Printing Charges,	44 14 0
		Bourne and Shepherd, for	
		Photographs,	37 0 0
		King, Hamilton and Co., for	
		landing and clearing	
		charges,	29 15 3
		Freight and Miscellaneous,	25 12 0
		Postage,	8 7 6
			<hr/>
			2,469 7 4
		Balance, ..	317 8 8
			<hr/>
Rs. ..	<hr/> 2,787 0 0	Rs. ..	<hr/> 2,787 0 0

Europe.

RECEIPTS.		EXPENDITURE.	
Subscriptions realised in		Mr. Dickinson for Portrait,	£126 0 10
England,	£76 0 0	Mr. Gellowski for Bust, ..	105 0 0
Remitted from India,	200 0 0	Ditto for Pedestal,	17 0 0
		Mr. Burlett's Bill,	4 4 0
		Woodbury Company for	
		copies of Printing,	9 8 6
		Messrs. King and Co. for	
		Package and Freight, ..	11 14 0
		Postage and Miscellaneous,	0 12 7
			<hr/>
			273 19 11
		Balance, ..	2 0 1
			<hr/>
	<hr/> £276 0 0		<hr/> £276 0 0

DR. D. BRANDIS announced to the Meeting that news had been received of the death at Penang of the late Mr. S. KURZ, Curator of the Herbarium, Botanic Gardens, Calcutta, and read the following sketch of his life :

SULPIZ KURZ, Curator of the Herbarium at the Botanic Gardens, Calcutta, was born at Augsburg, in Bavaria, on the 5th May 1834. His father died early, and the boy attended school at Munich where his mother had settled. At an early age he commenced collecting objects of natural history, especially insects. After leaving school he attended lectures at the University of Munich, and chiefly devoted himself to the study of Botany, Mineralogy and Chemistry. In 1854 misfortunes in his family compelled him to abandon his studies, and he went to Holland where he worked as an apothecary and, after mastering the Dutch language, enlisted in the subordinate Medical Service of the Dutch Colonial Army. He landed at Batavia in September 1856, and was sent to Banka in March 1857, where he remained two years. During that time his work was light, and he was able to explore the island and to make botanical collections. In 1859 he was recalled to Batavia and joined the Military expedition to Bori in Celebes. In September 1859 Kurz returned to Batavia, and was appointed as an Assistant on the Staff of the Botanic Garden at Buytenzoorg. Here for the first time in his life he had the advantage of working under the guidance of other botanists, and with the assistance of a large library and a rich herbarium. He devoted himself principally to Ferns, Bamboos, Musaceae, Pandaneae and other difficult groups. A few years later Dr. Thomas Anderson, the Superintendent of the Botanical Gardens, Calcutta, came to Java in order to study the system of Cinchona cultivation which had then for some time been established by the Dutch authorities. He induced Kurz, with the permission of the Dutch Government, to accept the appointment which he held at the Herbarium of the Calcutta Botanical Gardens until his death. In October 1863 Kurz left Java, and joined his new appointment at the Gardens early in 1864.

Before his transfer to Calcutta he had not published much, a few papers only on the vegetation of Banka and other matters had been printed in the "*Naturkundige Tydschrift voor Nederlandsch Indie*." In Calcutta, however, he commenced a series of important botanical publications, which appeared in English and Continental Periodicals, chiefly in the London Journal of Botany, the Proceedings of the Linnean Society, in Miquel's Annales, the Flora of Regensburg and the Botanische Zeitung. But his later and most important papers were published in the Journal of the Asiatic Society, of which he became a member in 1869.

In 1866, Kurz was deputed by the Government of India to Port Blair, in order to study the vegetation of the Andaman islands. He spent the months of April and May on that duty, and the results of his explorations were recorded in a most valuable Report which was published by Government in 1870. While engaged in examining the interior of South Andaman, he was seized by the Burman convicts, whom the Superin-

tendent of Port Blair had given to assist him in his work, and was left tied hand and foot in the jungles on the ground. These and subsequent circumstances, which prevented the more extensive excursions which he had projected through the islands, obliged Kurz to return to Calcutta sooner than he had intended.

In 1867, the Government of India decided to employ him on the preparation of a hand-book, intended chiefly for the use of forest officers, of the trees, shrubs and climbers growing in the forests of British Burma. To this new task, Kurz devoted himself with his usual ardour and enthusiasm, and his researches regarding the Flora of Burma may justly be regarded as the most important work of his life. From December 1867 to June 1868, Kurz explored the forests in the province of Pegu and part of those in Martaban. But when after his return to Calcutta he examined and arranged the rich materials collected by him, he found that many doubtful points remained, and he was accordingly deputed on a second tour to the same districts, which lasted from December 1870 until May 1871.

Besides the materials collected by himself, Kurz had the advantage of consulting large collections made by others in Burma, and he was thus enabled to describe numerous new genera and species. A number of Burmese plants collected by him are described by other Botanists and deservedly bear his name. Between 1872 and 1877 he contributed two series of valuable papers to the *Journal of the Asiatic Society*. One series he called "New Burmese plants," and the other, "Contributions towards the knowledge of the Burmese Flora." A general account of his researches was embodied in a quarto volume published by Government in 1875, under the title "Preliminary Report on the Forest and other vegetation of Pegu." This work contains an admirable account of the vegetation in all parts of that province, as well as a most useful list of vernacular (Burmese) names of plants with their systematic names.

The chief results of his labours in regard to the Burma Flora, however, were embodied in his *Forest Flora of British Burma*, a work, regarding which it is not too much to say, that it has placed the name of Kurz in the first rank of Indian Botanists. This work was published towards the close of last year in two volumes, by order of the Government of India. It contains full and clear descriptions of 2,000 species, and will for a long time to come remain a standard work of reference for all interested in the vegetation of British Burma and the adjacent countries.

In 1875, Kurz took three months' leave and devoted it to a botanical exploration of the Nicobars, but exposure and fatigue in the unhealthy climate of those islands brought on a severe attack of fever which much weakened his constitution. In 1876, he contributed to the *Journal of the Asiatic Society* a paper on the Vegetation of the Nicobars, based chiefly

upon the collections made by the Austrian Naturalists, attached to the Novara expedition. These collections had been sent to him for publication by the Director of the Imperial Museum at Vienna.

On the 12th November 1877, shortly after his Forest Flora had been published, Kurz left Calcutta on leave to visit the Straits Settlements. He reached Penang on the 12th December, but was taken ill and died at that place on the 15th January 1878, at the age of 43 years. An uninterrupted residence in the tropics of 21 years and constant exposure on his botanical explorations had undermined his constitution. His ardour in the pursuit of Botany was irrepressible, and he rarely thought of health or comfort on his expeditions.

He was Member of several learned Societies; his fellow Botanists in England, the Continent of Europe and in India will mourn his loss, and by many of his friends outside the circle of those interested in science, he will long be remembered by his enthusiastic and single-minded devotion to the science, which from early youth was the aim and object of his life.

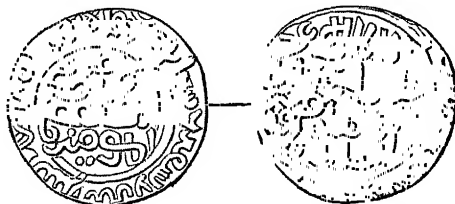
Mr. BLOCHMANN read an extract from a letter from Mr. Grierson on the Rangpuri Genitive.

"I find I was wrong when I said that the Rangpuri "आपनकार" is a double genitive. It is no such thing. I have traced it up here in colloquial आपनकरे, which is evidently Prākṛit क ल क and Sansk. कृत. Hoernle mentions this, but says that करे is only found in Tulsī Dās, while here it exists in every day talk. I think this fact is worth preserving, though hardly worth making a separate paper about."

Mr. BLOCHMANN exhibited a unique gold coin struck by Jalāl-uddīn Fīrūz Shāh (II) of Dihlī. He said—"The coin which I now exhibit belongs to Mr. Jos. T. Tripe, of Dynechupra, Tirhut. Mr. Tripe, on his last visit to Calcutta, shewed me about sixty or seventy gold coins belonging to him. They were mostly gold-muhurs struck by the Emperor Akbar, in splendid preservation, the specimens belonging to the years between 970 and 987 H. There were also several gold-muhurs struck by Shāhjahan, a gold tānkah of Muhammad Shāh Tughluq, and the Fīrūz Shāhī now exhibited. The remarks made by Mr. Thomas in his 'Chronicles of the Pathan kings,' p. 144, lead me to believe that Mr. Tripe's coin is unique."

'Mr. Tripe has also since sent me a large collection of silver coins struck by Sher Shāh, Islām Shāh, Muhammad Shāh, Bahādur Shāh, &c., containing several new types, which I hope to lay before the next meeting. The best thanks of the Society are due to Mr. Tripe for allowing these coins to be exhibited.

Gold coin struck by Firuz Sháh II, of Dihlí, A. H. 692 [A. D. 1293]
 GOLD. WEIGHT, 168·61 grains. Unique. Mr. Jos. T. Tripe, of Dynechu-
 pra. (*Vide* Thomas, 'Pathan Kings', p. 144, and Pl. II, No. 50.)



OBVERSE—الامام المستعصم ايدو المؤمنين

ضرب هذه السكة بحضرة دهلي في سنة اثنين وتسعين وستمائة

REVERSE—السلطان الاعظم جلال الدنيا والدين ابو المظفر فيروز شاه السلطان

Margin—the same as the margin of the Obverse.

OBVERSE—*The Imám Musta'ím, Commander of the Faithful,*

Margin—*This coin was struck at Dihlí, the capital, in 692.*

REVERSE—*The great king Jalál-uddunyá wad-dín Abul-Muzaffar
 Firúz Sháh.*

Though Al-Musta'ím, the last Khalifah of Baghdád, had lost his empire and his life in the invasion of the Mughuls (Mongolians) under Hulágú Khán in 656 H., the kings of India continued his name on their coinage for more than sixty years, just as Indian princes until lately continued to strike coins in the name of Sháh 'Alam. During the eighth century of the Hijrah, Indian kings applied to, and received from, the Fátimite Sultáns of Egypt, *sanads* of investiture; and we see from the poems of Badr-i-Chúch, the poet-laureate of Ghiyás-uddín Tughluq how great a value the Muhammadans attached to such *sanads*. Mubárák Sháh (*vide* Thomas, *l. c.*, p. 255) appears to have been the first king of Dihlí who assumed the title of Khalífah. After him the title becomes quite common, the phrase used on the coins being *خليفة الله بالحجة والبرهان* 'the Representative (*Khalífah*) of God by proof and evidence'. Akbar also used it in that peculiar sense which the establishment of his 'Divine Faith' gave it; but I have not seen it on the coins of his successors, though it often occurs applied to them in the prefaces of Muhammadan works. Now-a-days, the grand title of Khalífah has sunk so low as to be applied to master tailors, cooks, and other menial servants. The Sultáns of Turkey appear to claim it as having descended to them from the Egyptian Khalífahs; but from the preceding examples, it is clear that any Muhammadan king may assume the title and the exercise of the spiritual functions which the title is supposed to imply.'

The following papers were read :—

1. *Aberrant Dentition of Felis Tigris*.—By R. LYDEKKER, B. A.

(Abstract.)

The author exhibited the lower jaw of a Tiger from Burma, which had the peculiarity of bearing on one side an additional promolar tooth in advance of the two normal teeth. The presence of this additional tooth can only be explained on the hypothesis of a "reversion" to the extinct Miocene and Pliocene genus *Pseudaelurus* in which three lower premolars were normally developed.

The paper will be published in full, with plate, in Journal Part II.

2. *Figure of Buddha recently found at Sarnáth*.—By H. RIVETT-CARNAC, C. I. E., M. R. A. S., &c.

In the account of the Buddhist remains at Sarnath, near Benares, published in the Journal, Asiatic Society, Vol. XXXII, General Cunningham noticed the desirability of clearing away the rubbish at the foot of the great *Stupa* called *Dhameh*, as he was of opinion that possibly some of the statues of Buddha which once occupied the eight niches of the tower might be found among the debris. It may, therefore, be of interest to the Asiatic Society to learn that during a visit paid to Sarnáth last Christmas by my wife and myself, in company with the Rev. J. C. and Mrs. Murray-Aynsley, who are travelling through India, a stone figure of Buddha was discovered amongst the ruins, in as nearly as possible the exact position indicated by General Cunningham. Whether this figure once occupied one of the eight niches of the tower, or belonged to some other portion of the building, may perhaps be determined with the help of the sketch now sent, together with a brief notice of the figure and a statement of the position in which it was found.

The figure was discovered by Mrs. Murray-Aynsley, whose attention was attracted by the pattern of a necklace carved on a piece of sandstone, which she found embedded in the debris on the south side of the trench cut by General Cunningham, many years ago, leading to the passage on the east side of the *stupa*. The rain has apparently washed away the soil from the sides of the trench and had left this fragment exposed, at a depth of about two feet from the level of the top of the rubbish by which the tower is now surrounded. At first it was thought that the sculptured necklace was a small fragment only, but on trying to extricate it, it was found necessary to remove the stones and bricks at the top and sides, and by degrees the figure, of which a drawing is annexed, (Plate I) was with some little difficulty extricated.

The block is of red Chunar sandstone, of the same character as that employed in the well-known tracery which still ornaments the *stupa*. The sketch has been drawn to scale, and it will be seen that the stone, in its present state, is 2 feet, 4 inches in height by 1 foot, 8 inches in breadth, and consists of a carved base 6 inches in height surrounded by a further leaf-shaped base 5 inches in height, on which is a seated figure of Buddha. The block has been much broken, but in the centre of the lower base the lotus, "wheel-ornament" or "disc," so often seen on Buddhist carving, is intact. The remains of what would appear to have been a pedestal, or support to the disc, similar to those which support the discs on the summit of the Northern Gateway of Sanchi (see frontispiece, Fergusson's *Tree and Serpent Worship*) can still be distinguished. On either side of the disc are the remains of three figures. These figures have been much defaced, but it would appear that, when intact, each figure had an arm placed on the shoulder of its neighbour, an arrangement similar to what I recently noticed on some old Buddhist pillars at Benares.

The legs of the seated figures of Buddha are in fair preservation. They are crossed in the conventional attitude. The soles of the feet are turned up, and in the centre of each is carved a small flower (?). The arms have been broken off, but the thumb of the right hand is in good preservation, and the remains of the finger of the left hand are discernible, suggesting that the figure was in the conventional form of "Buddha the teacher" as described by General Cunningham. The necklace which first attracted Mrs. Murray-Aynsley's attention, is delicately carved and is in good preservation. The head has been broken off, and, as with it the upper portion of the block has been carried away, it is impossible to say whether the head was ever surmounted by an aureole or not.

At the back of the figure, the carved tracery which forms a panel on each side of the seated Buddha, is preserved, and on the left hand side is found the lower portion of a small carved figure, standing on a bracket carved out of and forming part of the original block. Our time was limited, but some search was made in the hope of finding fragments of the head aureole, or of other parts of the carving. Nothing was found. Careful and more extended search would, however, doubtless bring many other interesting remnants to light, and possibly the missing head of the figure.

On the sketch will be found, drawn in blue, the outline of the niche, and pedestal of one of the eight niches of the *stupa*, each niche being, according to General Cunningham, $5\frac{1}{2}$ feet in length, and the same in breadth. The stone pedestals, which are still *in situ* in most of the niches, are a little more than 1 foot in height and nearly 4 feet in length. The outlines of niche and pedestal have been drawn to scale, below and around the sketch

of the seated figure, so as to assist in determining whether this is one of the missing figures belonging to the niches.

At first sight the figure will, doubtless, be pronounced somewhat small, and it will suggest itself that, as each niche was provided with a large pedestal, the carved base below the figure, as shewn in the drawing, would be unnecessary. Then, too, it will suggest itself that the figures on the lower pedestal are small for a piece of sculpture to be placed on a niche at a height of 24 feet from the ground.

General Cunningham, as the following extract will shew, expected that the figures of the niches would be of life size. He wrote in the Volume of the Society's Journal above quoted.

"The lower part of the monument has 8 projecting faces, each 21 feet, 6 inches in width, with intervals of 15 feet between them. In each of the faces, at a height of 24 feet above the ground, there is a semi-circular headed niche, $5\frac{1}{2}$ feet in width and the same in height. In each of the niches there is a pedestal, one foot in height, and slightly hollowed on the top, to receive the base of a statue, but the statues themselves have long disappeared, and I did not find a fragment. There can be little doubt, however, that all the 8 statues represented Buddha the preacher in the usual form, with his hands raised before his breast, and the thumb and forefinger of the right hand placed on the little finger of the left hand, for the purpose of enforcing his argument. Judging by the dimensions of the niches the statues must have been of life size."

Although the figure now found is smaller than might be expected, still the following points are in favour of its having once occupied one of the niches. It was found in the position indicated by General Cunningham, *i. e.*, amongst the debris at the base of the *stupa* almost immediately below a niche, and in just the position in which one might expect to find a figure which had been thrown down from the niche and broken by Mahomedan iconoclasts, or hostile Brahmins.

The stone is of the same description as that with which the other portions of the structure are ornamented. Although the carving on the head and base of the figure is somewhat minute for an ornament to be placed at a height of 24 feet from the ground, still, equally delicate treatment of detail is sometimes met with in similar positions on Buddhist buildings. Again it is not improbable that the head was surrounded by an aureole, which would bring the total height of the carving up to $3\frac{1}{2}$ feet. This added to another foot, the height of the pedestal, (which is still to be seen in position) would bring the sculpture within 1 foot of the top of the niche. At the same time it must be admitted, that the breadth of the figure is hardly in proportion to the size of the niche.

The subject is, however, one on which it is hoped that Members of the Society will be able to form an opinion from the information now placed before them.

The figure has been taken into Benares, and made over to Captain Boileau, R. E., who has been good enough to take charge of it, until the wishes of General Cunningham as to its disposal are known.

It appears desirable to take advantage of the present opportunity to bring to the notice of the Society, that, unless steps are promptly taken to preserve the outer stone carving of the Dhameh *stupa*, this unique specimen of ancient Indian art will soon be seriously damaged. When we were at Sarnáth, some of the large stones of the well known beautiful tracery appeared to be on the point of falling out.

The expenditure necessary for saving this portion of the building from ruin would be inconsiderable *now*. If the stones are once allowed to fall to the ground, the expense, and difficulty of restoration will become enormous.

3. *A few Magnetic Elements for Northern India.*—By R. S. BROUGH.

Having recently had occasion to measure the dip of the needle and the strength of the horizontal component of the earth's magnetic force at Calcutta, Jubbulpore and Allahabad, with a view to ascertaining to what extent the indications of an arbitrarily calibrated galvanoscope, uncorrected for the local value of the earth's magnetism, would be trustworthy, I think it desirable to put the results on record.

The horizontal intensity was measured with a Kew-pattern portable unifilar magnetometer, and the observations have been corrected for temperature, torsion and scale error—

STATIONS.	Longitude.	Latitude.	Date.	Horizontal force in dynes.	Dip.
Calcutta,	88° 22' 50"	22° 32' 32"	Jan. 1878	0·37158	28° 59' 30"
Jubbulpore, ..	80° 00' 00"	23° 10' 00"	Dec. 1877	0·36667	29° 23' 30"
Allahabad,	81° 54' 12"	25° 27' 43"	Dec. 1877	0·35915	33° 18' 45"

Dividing the horizontal component by the cosine of the dip, we obtain the total force thus:—

Calcutta : 0·42482 dyne
 Jubbulpore : 0·42084 „
 Allahabad : 0·42977 „

There are on record several observations of the dip in Calcutta, which it will be interesting to bring together here.

The dip appears to have been measured for the first time when the French Corvette "*La Chevette*" visited these waters in 1827, by M. de Blosserville who found it to then be*

26° 32' 38"

Ten years later, in 1837, on the occasion of the visit of another French Corvette "*La Bonite*" to the Hugli river, the dip was measured at Kalagachia (Diamond Harbour) by the chief Hydrographer, who found it to be†

26° 39' 04"

exhibiting a change of only 0° 06' 26 from the result of the earlier measurement.

The next and most recent measurement, was made by the brothers Schlagintweit in March 1856 and in April 1857, in which years it was found to be respectively‡

28° 06' 43"

and 28° 22' 56"

The same observers found the dip at Jabalpur in December 1855 to be§

28° 31' 08"

Their measurements of the horizontal force gave:—

0·37386 dynes at Calcutta in March 1856

0·36644 " " in April 1857

0·39959 " Jabalpur in December 1855

A very valuable series of observations was made in 1867-68 by the late Captain Basevi, R. E., under the orders of Colonel J. T. Walker, C. B., R. E., Superintendent of the G. T. Survey (now Surveyor-General of India,) at 14 stations extending from 15° 6' to 30° 20' North latitude,|| but none of them are coincident with the three stations under consideration.

The values of the dip and horizontal intensity at the limiting stations of the series were as follow:—

STATIONS.	Latitude.	Longitude.	Date.	Horizontal intensity.	Dip.
Namthabad, ..	15° 06' 00"	77° 36' 00"	April 1868	0·37401	11° 40' 56"
Deyrah,	30° 20' 00"	78° 06' 00"	Jan. 1867	0·33604	41° 27' 34"

* "Asiatic Researches" Vol. XVIII, Part I, p. 4.

† Proceedings, Asiatic Society of Bengal, Wednesday, 3rd May, 1837.

‡ Observations in India and High Asia, Vol. I.

§ *Loc. Cit.*

|| General Report of the Operations of the Great Trigonometrical Survey of India during 1867-68.

4. *Description of two apparently new Mammals from Tenasserim.*—By
W. T. BLANFORD, F. R. S.

PRIONODON MACULOSUS, sp. nov.

Allied to *P. gracilis*, but much larger, and much darker in coloration, the upper parts being blackish brown, broken up into large spots and bands by greyish white lines, whereas in *P. gracilis* the upper parts are pale with black patches. In the latter too the pale rings on the tail are broader than the dark rings, and there is a long white tip, longer than the last dark ring, whereas in *P. maculosus* the reverse is the case, the dark rings being nearly twice as broad as the light. The only other species, *P. pardicolor* of the Himalayas, is much smaller than *P. maculosus*, it has more numerous rings on the tail, and the upper parts are marked with more or less rounded spots.

In *P. maculosus* there are two broad dark stripes down the back of the neck, divided by a narrow white band, with a faint mesial streak, which becomes a double line of elongate spots between the shoulders. The two dark bands pass into the dark patches of the back; on each side of these bands is a white, rather wavy stripe, commencing at the ear and continued along the neck, over the shoulder, and down the side to the thigh, becoming more irregular behind, beneath this again is a dark band somewhat broken up into spots in front and on the sides. The back is crossed by six transverse white bands, the first five equidistant, the first joining the central neck streak, the hinder all connected with the lateral white band. There are small dark spots on the fore neck forming an imperfect gorget, also spots on the lower portion of the sides and outside of the limbs. On the tail are seven white rings and a very short white tip. Nose and crown dark brown, forehead between the eyes and cheeks light brown, a dark ring round the orbit, with a streak running back to below the eye and another passing up to the crown. Ears rounded, blackish brown outside and near the margin inside, a few long pale hairs on the inner surface of the ear conch; whiskers long, extending to behind the ear, the upper brown, the lower entirely white. Soles, except the pads, covered with fine hair.

Fur soft and short, not more than half an inch long on the back, ash grey at the base, black or white at the tip on the upper parts, white throughout below. The following dimensions were taken on an adult male preserved in spirit:—

	inches.
Length from nose to rump over curve of back,.....	18·25
Ditto of tail without the hairs at the end,	16·
Ditto of hairs at end,.....	0·75
Total,	35·

Length of ear from orifice,.....	1·05
Ditto of hind foot and tarsus,	2·8
Ditto of skull,	3·
Breadth of do. across zygomatic arches,.....	1·5

Two specimens have been examined ; one a very beautiful skin belonging to Mr. Hume, and collected by Mr. W. Davison at Bankasun in Southern Tenasserim, the other a perfect male in spirit obtained by Mr. Limborg west of Moulmain. Both appear fully adult.

SCIURUS RUFIGENS, sp. nov.

This squirrel is of medium size, the body being nearly equal in length to *S. caniceps* and *S. atridorsalis*, but the tail is much shorter, its length, without including the hairs at the end, being considerably less than that of the head and body. Fur soft throughout, hairs on the tail distinctly distinct.

Upper parts dark olive, grizzled or punctulated, cheeks ferruginous, whiskers black, ears thinly clad, not tufted, a small patch of silky white hairs behind each ear, often concealed by the ear conch, lower parts white, tail hoary above, chestnut below, the hairs above being black with a white ring near the base and a white tip, and ferruginous below, tipped black and white. Throat and chin sometimes slightly marked with rufous. Nose to insertion of tail 8, tail without terminal hairs 6, hind foot 1·8, ear from orifice 0·8. The dimensions were taken by Mr. Davison before skinning.

The skull, which has a peculiarly elongate nose, much longer and narrower than in the other Tenasserim squirrels, is 2·07 inches long and 1·2 broad across the zygomatic arches.

This species has only been obtained on the slopes of Muleyit, a lofty mountain about 60 miles west of Moulmain. Four skins were collected by Mr. Davison and one by Mr. Limborg. All were procured in dense forest, at an elevation of above 5000 feet.

The reading of the following papers was postponed.

Notes on the Erratics of the Upper Punjab.—By A. B. WYNNE, ESQ.,
F. G. S., &c.

Stray Aryans in Tibet.—By R. B. SHAW, ESQ.

LIBRARY.

The following additions have been made to the Library since the Meeting held in January last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies or Editors.

Berlin. Die Königliche Preussische Akademie der Wissenschaften,—*Monatsbericht*, September and October, 1877.

G. Kirchhoff.—Zur Theorie der Bewegung der Elektrizität in unterseeischen oder unterirdischen Telegraphendrähten.

Calcutta. The National Magazine,—Vol. 2, P. 4.

———. The Mahabharat,—No. 17.

———. The Rig Veda Sanhita,—Vol. 1, No. 5.

———. The Geological Survey of India,—Records, Vol. X, Pt. 4.

V. Ball.—On the Geology of the Mahanadi Basin, and its vicinity. On the Diamonds, Gold and Lead Ores, of the Sambalpur District. *Dr. O. Feistmantel*.—Note on "Eryon Comp. Barrovensis," McCoy, from the Snipermatur group near Madras. Notes on Fossil Floras in India.

———. ———. *Memoirs*,—Palæontologia Indica, Ser. XI. 2.

Dr. O. Feistmantel.—Flora of the Jabalpur Group (Upper Gondwanas) in the south Nerbada Region.

London. The Athenæum,—Nos. 2616—2620, 1877.

———. The Geographical Magazine,—Vol. 6, No. 12, 1877.

A. R. Markham.—Irrigation in Southern India, IV., The Basin of the Krishna. Indian Famines and Sun-spots. *R. B. Shaw*.—Water-partings *versus* Ranges.

———. Nature,—Vol. 17, Nos. 424—427, 1877.

Pisa. La Società Toscana di Scienze Naturali,—Atti. Vol. 3, fas. 1.

Torino. La Reale Accademia delle Scienze,—Atti. Vol. 12, Disp. 1—5, 1876-77.

———. Osservatorio della Regia Università,—Bollettino, Anno 11, 1876.

MISCELLANEOUS PRESENTATIONS.

The Yajur Veda Sanhita, Fas. 29.

HOME DEPARTMENT, GOVERNMENT OF INDIA.

Administration Report on the Jails of Bengal for 1876.—By H. Beverley, M. A.

Report on the Police of the Lower Provinces of the Bengal Presidency for 1876.—By J. Monro, C. S.

Report on Vaccination in the Province of Bengal for 1877.—By Dr. J. F. Beatson.

GOVERNMENT OF BENGAL.

Det Arnamagnæanaske Haandskrift,—No. 28, Codex Runicus.

THE TRUSTEES OF THE ARNAMAGNÆAN FUND.

Ninth Annual Report of the United States Geological and Geographical Survey of the Territories for 1875.—By F. V. Hayden.

THE AUTHOR.

PERIODICALS PURCHASED.

Berlin. Journal für die reine und angewandte Mathematik,—Band 84, Heft 3—4.

M. C. Jordan.—Mémoire sur les équations différentielles linéaires à intégrale algébrique. *Prof. A. Cayley*.—On the 16-nodal quartic surface. *Herrn Hamburger*.—Über die Wurzeln der Fundamentalgleichung, die zu einem singulären Punkte einer linearen Differentialgleichung gehört.

Calcutta. The Vedârthayātna, or an attempt to interpret the Vedas,—Pt. 2, No. 6.

———. Stray Feathers, Vol. 5, Nos. 5—6, 1877.

The British Association's Rules for Zoological Nomenclature. *J. A. Gammie*.—Occasional Notes from Sikhim; No. I. *S. B. Fairbank*.—A list of birds collected and observed on the Palani Hills. *V. Ball*.—Notes on birds observed in the Region between the Mahanadi and Godavari Rivers. Remarks on the Genus *Iora*. *W. Davison*.—Notes on the Nidification of some Burmese birds. *A. O. Hume*.—*Corvus Macrorhynchos*, of Wagler. *W. E. Brooks*.—Ornithological Notes. *A. O. Hume*.—Remarks on the Genus *Micropternus*. *W. T. Blanford*.—Notes on some birds in Mr. Mandelli's collection from Sikhim, Bhutan and Tibet.

———. The Calcutta Review, No. 131, January 1878.

Giessen. Jahresbericht über die Fortschritte der Chemie,—Pt. 2, 1876.

Göttingen. Göttingische Gelehrte Anzeigen,—Stück, 49—51.

———. ———. Nachrichten,—Nos. 25, 26.

Leipzig. Annalen der Physik und Chemie,—Band 2, Heft 3, No. 11, 1877.

E. Edlund.—Über den Zusammenhang der electromagnetischen Rotation mit der unipolaren Induction. *O. E. Meyer*.—Beobachtungen von Adolf Rosencranz über den Einfluss der Temperatur auf die innere Reibung von Flüssigkeiten.

London. The Academy,—Nos. 293—296, 1877-78.

———. The Chemical News,—Vol. 36, Nos. 942—945, 1877.

No. 944. *Dr. A. Downes*, and *T. P. Hunt*.—Note on the Action of Light upon Solution of Oxalic Acid.

London. The Annals and Magazine of Natural History,—Vol. 20, No. 120.

H. J. Carter.—Description of a new Species of *Foraminifera*. (*Rotalia spiculotesta*.) *A. G. Butler*.—Descriptions of new Species of *Heterocera* from Japan. Part I, Sphinges and Bombyces. *Lieut.-Col. H. H. Godwin-Austen*.—Descriptions of supposed new Birds from the Naga Hills and Eastern Assam. *Arthur, Marquis of Tweeddale*.—Descriptions of some new Species of Birds.

———. The Journal of Botany,—Vol. 6, No. 180, 1877.

H. F. Hance.—Two New Species of *Lysimachia*. *J. G. Baker*.—Two Ferns from Japan.

———. The Society of Arts,—Journal, Vol. 26, Nos. 1308 to 1310, 1877, and No. 1311, 1878.

———. The London, Edinburgh and Dublin Philosophical Magazine,—Vol. 4, No. 25, 5th Series, 1877.

Dr. H. Buff.—On the Thermal Conductivity and Diathermancy of Air and Hydrogen. *G. J. Stoney*.—On the Penetration of Heat across Layers of Gas.

R. S. Brough.—A Theoretical Deduction of the best Resistance of a Telegraph Receiving-instrument.

New Haven. The American Journal of Science and Arts,—Vol. 14, No. 83, 1877.

Paris. Annales de Chimie et de Physique,—Tome 12, 5me Série, Decembre, 1877.

M. Berthelot.—Nouvelles recherches sur les phénomènes chimiques produits par l'électricité de tension.

———. Comptes Rendus,—Tome 85, Nos. 23—27, 1877.

No. 23. *MM. E. Frey et Feil*.—Sur la production artificielle du corindon, du rubis et différents silicates cristallisés. *M. A. de Caligny*.—Sur divers moyens d'accélérer le service dans les écluses de navigation. *M. P. Jablockhoff*.—Pile dans laquelle l'électrode attaquée est du charbon.

No. 24. *M. G. Govi*.—De la loi d'absorption des radiations à travers les corps, et de son emploi dans l'analyse spectrale quantitative. *M. Dejerine*.—Note sur les lésions du système nerveux dans la paralysie diphthérique.

No. 26. *M. Ch. Nauden*.—Observations au sujet du cotonnier Bahmié. *M. L. Caillietet*.—De la condensation de l'oxygène et de l'oxyde de carbone. *M. R. Pictet*.—Expériences sur la liquéfaction de l'oxygène. *M. G. Plante*.—Gravure sur verre par l'électricité.

No. 27. *M. Janssen*.—Sur la constitution de la surface solaire et sur la photographie envisagée comme moyen de découvertes en astronomie physique. *M. E. Caillietet*.—Sur la condensation des gaz réputés incoercibles. *M. G. Hayem*.—Sur l'évolution des globules rouges dans le sang des animaux supérieurs (vertébrés vivipares). *M. V. Feltz*.—Expériences démontrant qu'il y a pendant la vie un ferment figuré dans le sang typhoïde humain.

———. Revue des Deux Mondes,—Tome 24, Livraison 4, December 1877, et Tome 25, Livraison 1, Janvier 1878.

———. Journal des Savants,—Décembre 1877.

———. Revue Scientifique,—Nos. 24 to 26, 2e Série, 1877, and Nos. 27, 28, 2e Série, 1878.

No. 24. *M. A. Gaudry*.—Les ruminants et leurs parents.

No. 27. *R. Strachey*.—Des causes physiques de la famine dans l'Inde. Le Jardin des Plantes de Paris.

No. 28. Les Origines du Transformism, d'après la philosophie de Ruyare-bohni, saisie en 1808. Le Pamir, par. J. B. Paquier.

BOOKS PURCHASED.

Low, C. R. History of the Indian Navy, (1613-1863). 2 Volumes. 8vo., London, 1877.

KIELHORN, F., DR. The Vyākaraṇa-Mahābhāṣya of Patañjali. Vol. I, Pt. 1, (2 copies.) 8vo., Bombay, 1878.

OSBORN, R. D., MAJOR. Islam under the Khalifs of Baghdad. 8vo., London, 1878.

Papers on the subject of the Bengal Cyclone and Storm-wave of the 31st October—1st November 1876, and the subsequent Cholera Epidemic. Folio. London, 1877. P. P.

Copy of Correspondence between the Secretary of State for India and the Government of India, on the subject of the famine in Western and Southern India. Folio. London, 1877. P. P.

PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL.
FOR MARCH, 1878.

The Monthly General Meeting of the Society was held on Wednesday, the 6th March, at 9 o'clock P. M.

W. T. BLANFORD, Esq., F. R. S., President, in the Chair.

The Minutes of the last meeting were read and confirmed.

The following presentations were announced—

1. From Major-General F. S. Roberts, C. B., V. C., Quarter Master General in India, copies of "Routes in the Bengal Presidency," and "Routes in Asia, Section I," compiled under his directions.

2. From J. W. McCrindle, Esq., M. A., a copy of his work entitled, "Ancient India, as described by Megasthenes and Arrian; being a translation of the fragments of the Indika of Megasthenes collected by Dr. Schwanbeck, and of the first part of the Indika of Arrian."

3. From the Rev. C. H. A. Dall, M. A., "The Nomenclature in Zoology and Botany," by W. H. Dall.

4. From Capt. C. J. F. Forbes, three copies of his pamphlet on the "Affinities of the Dialects of the Chepang and Kusundah Tribes of Nipal with those of the Hill Tribes of Arracan."

The following gentlemen duly proposed and seconded at the last Meeting were elected Ordinary Members—

W. M. Souttar, Esq., C. S.

Surgeon-Major E. J. Gayer.

James Wilson, Esq., C. S.

The Hon'ble Horace Cockerell, C. S.

A. Campbell, Esq.

G. W. Allen, Esq.

H. G. Keene, Esq., C. S.

W. Hoey, Esq., C. S.

Babu Adhar Lal Sen.

The following are candidates for ballot at the next Meeting—

1. F. R. Mallet, Esq., Assistant Superintendent Geological Survey of India, proposed by W. T. Blanford, Esq., seconded by H. B. Medlicott, Esq.

2. Alfred Simson, Esq., Calcutta, proposed by Capt. J. Waterhouse, seconded by Dr. D. D. Cunningham.

The PRESIDENT, in proposing on the part of the Council, a vote of thanks to Sir E. C. Bayley for his long and valuable services to the Society, explained that the reason for this proposition not having been made at the last meeting, was that the Council had hoped Sir E. C. Bayley would be able to retain the chair of the Society until his departure for Europe. It was scarcely necessary, Mr. Blanford said, for him to remind the members of the Asiatic Society of their obligations to their late President. During the period of between 18 and 19 years, since he was elected a member of the Society in 1859, Sir E. C. Bayley had been on the Council for no less than 14 years, he had held the office of President five times, besides being Vice-President for upwards of 3 years, and he has at all times been a most energetic and valuable member of the Society's Council, aiding in its labours, and assisting the other officers with advice, even when absent from Calcutta with the Government. Sir E. C. Bayley's contributions to the Society's publications date back to 1852; since that time notes by him on various numismatical and archaeological subjects have frequently appeared in the Journal and Proceedings, and from his extensive knowledge of early Indian history and his readiness to assist all who were studying the ancient coins, sculptures, and traditions of the country, his share in the researches of the Society has been far greater than would be supposed from a list of his published papers. He has also energetically assisted as a member of the Government of India, in utilizing for the purposes of geographical and biological research the various expeditions sent by the Government into neighbouring little known countries in the course of the last few years. The Society are also greatly indebted to Sir E. C. Bayley for the prominent part he has taken in establishing the Indian Museum, of which he has been a Trustee from the commencement, originally on the part of Government, subsequently as President of the Society, but in both capacities he has been an earnest supporter of the interests both of the Society and of science in India, whilst no one has been a warmer advocate of the Society's claims upon the Government, or has contributed more to the recent improvement in the Society's financial position.

He would therefore propose the following resolution for adoption by the meeting—

"Resolved that the Society record their grateful recognition of the eminent services rendered by their late President, the Hon. Sir E. C. Bayley, K. C. S. I., C. I. E., during the long period of his membership of the Society."

The resolution was carried unanimously.

The PRESIDENT also stated that the Council recommended that as a mark of the high sense they felt of the services rendered to the Society by Sir Edward Bayley and General Thuillier, those gentlemen should continue to receive the Journals of the Society free of expense.

The Council further proposed to obtain enlarged permanent photographs of Sir Edward Bayley and General Thuillier, to be placed in the Society's Rooms, and had already taken steps to obtain the negatives for this purpose.

The PRESIDENT announced that Mr. D. Waldie had been appointed a Member of Council in place of Mr. R. Lydekker, who had unexpectedly been obliged to proceed to England on leave.

The SECRETARY read the names of the following gentlemen, appointed by the Council to serve on the several Committees during the ensuing year—

Sub-Committee of Finance.

Dr. T. R. Lewis.	T. S. Isaac, Esq.
H. B. Medlicott, Esq.	E. Gay, Esq.
Dr. Rájendralála Mitra.	

Library.

Dr. Rájendralála Mitra.	Dr. Mohendralal Sircar.
Colonel J. F. Tennant, R. E.	A. W. Croft, Esq.
Colonel J. T. Walker, C. B., R. E.	C. J. Lyall, Esq.
Dr. D. D. Cunningham.	Dr. W. K. Waller.
Babu Prannath Pandit, M. A.	C. H. Tawney, Esq., M. A.
R. S. Brough, Esq.	The Hon. Whitley Stokes, C. S. I.
H. F. Blanford, Esq.	Lieutenant F. W. Jarrad, R. N.
E. Gay, Esq.	H. H. Locke, Esq.
Dr. O. Feistmantel.	R. Parry, Esq.
John Eliot, Esq., M. A.	D. T. R. Lewis.
A. M. Nash, Esq.	H. B. Medlicott, Esq.
Dr. J. Anderson.	H. Beverley, Esq. C. S.
A. Pedler, Esq.	J. Crawford, Esq., C. S.

Philology.

Dr. Rájendralála Mitra.	Maulvi Kabiruddin Ahmad Sahib.
C. H. Tawney, Esq., M. A.	Babu Dvijendra Nath Thakur.
Major-Genl A. Cunningham, C. S. I.	The Hon. Whitley Stokes, C. S. I.
J. Beames, Esq.	Babu Prannath Pandit, M. A.
F. S. Growse, Esq.	Dr. G. Thibaut.
Rev. K. M. Banerjea, LL. D.	C. J. Lyall, Esq.
Babu Gour Das Bysack.	Babu Pratápa Chandra Ghosha.
Dr. Mohendralal Sircar.	Dr. A. F. R. Hoernle.
Maulvi Abdul Latif Khán Bahádur.	

Natural History.

H. F. Blanford, Esq.	S. E. Peal, Esq.
V. Ball, Esq.	W. E. Brooks, Esq., C. E.
H. B. Medlicott, Esq.	Dr. W. Schlich.
Dr. O. Feistmantel.	Dr. T. R. Lewis.
D. Waldie, Esq.	R. Lydekker, Esq.
A. O. Hume, Esq., C. E.	Capt. G. F. L. Marshall, R. E.
Dr. D. D. Cunningham.	Dr. J. Anderson.
Dr. J. Armstrong.	Lieutenant F. W. Jarrad, R. N.
Dr. G. King.	Dr. D. Brandis.

Physical Science.

Colonel J. T. Walker, C. B., R. E.	J. Eliot, Esq., M. D.
H. B. Medlicott, Esq.	T. S. Isaac, Esq., C. E.
H. F. Blanford, Esq.	Colonel J. F. Tennant, R. E.
D. Waldie, Esq.	Commander A. D. Taylor.
A. Pedler, Esq.	Dr. O. Feistmantel.
R. S. Brough, Esq.	R. Lydekker, Esq.
Dr. D. D. Cunningham.	V. Ball, Esq.
Dr. T. R. Lewis.	Rev. F. Lafont.
E. Gay, Esq.	The Hon'ble J. O'Kinealy.
A. Cappel, Esq.	A. M. Nash, Esq., M. D.
A. W. Croft, Esq.	J. C. Douglas, Esq.

Coins.

Colonel J. F. Tennant, R. E.	Major-Genl. A. Cunningham, C. S. I.
Dr. Rájendralála Mitra.	Colonel F. W. Stubbs, R. A.

Rev. M. A. Sherring.

The SECRETARY read the following extracts from the Proceedings of the Government of India in the Home Department, No. 7/250, dated 9th February 1878.

RESOLUTION.

At the instance of Pundit Radhakrishna, of Lahore, a scheme was sanctioned by a Resolution in the Home Department, dated 3rd November 1868, for the discovery and preservation of the records of ancient Sanscrit literature, at an outlay of Rs. 24,000 per annum. The chief features of the scheme were as follows :

(1.) "To print uniformly all procurable unprinted lists of the Sanscrit manuscripts in Indian libraries, and to send them to the various learned societies of Europe and to individual scholars in Europe and India, with an intimation that the Government will carefully attend to their suggestions as to which of the manuscripts therein mentioned should be examined, purchased or transcribed ;"

(2.) "To institute searches for manuscripts, and to this end to prepare lists of desirable codices, to distribute these lists among scholars and other persons willing to assist in the search, with a request that they will report their discoveries to such officer as may from time to time be appointed by the Government of India, and to depute competent scholars on tours through the several Presidencies and Provinces to examine the manuscripts reported upon, to seek new manuscripts, to purchase manuscripts procurable at reasonable rates, and to have copies made of such manuscripts as are unique or otherwise desirable, but which the possessors refuse to part with;" and

(3.) "to grant to the Asiatic Society of Bengal an additional allowance for the publication of Sanscrit works hitherto unprinted."

The statement given in the margin shews the financial result of the scheme, *i. e.*, how the

	Tour expense of competent scholar.	Purchase of manuscripts.	Transcription of manuscripts.	Total.
	Rs.	Rs.	Rs.	Rs.
Bengal,	1,000	1,000	1,200	3,200
Bombay,	1,000	1,000	1,200	3,200
Madras and Mysore, ..	1,000	1,000	1,200	3,200
North-Western Provinces,	500	500	600	1,600
Punjab,	500	500	600	1,600
Oudh,	500	500	600	1,600
Central Provinces,	500	500	600	1,600
Rajputana,	1,000	1,000	1,200	3,200
	6,000	6,000	7,200	19,200
Printing Native catalogues of desirable manuscripts, .....	..	..	..	1,000
Additional grant to Asiatic Society, ....	..	..	..	3,000
Sundries, .....	..	..	..	800
				24,000

Rs. 24,000 sanctioned as the annual expense for carrying it out are distributed.

This Resolution was communicated to the several Local Governments and Administrations with instructions as to how to carry out the scheme.

The instructions were that all procurable unprinted lists of Sanscrit manuscripts in the Native libraries situate within the territories under the respective Local Governments and Administrations should be printed uniformly in octavo in the Nagri character and under the superintendence of a competent editor, such as Babu Rájendralála Mitra in Bengal, Mr. Burnell in Madras, and Dr. Bühler in Bombay.

Competentscholars should, it was said, be sent annually on tours to examine the manuscripts named in the Native catalogues so printed, to seek new manuscripts, to explain to Native scholars at the different

places visited the objects and importance of the mission, to purchase such manuscripts as the possessors were willing to sell at a reasonable rate, and to employ copyists to transcribe codices which were unique, extremely old or otherwise desirable, but which the possessors might refuse to part with. The gentlemen sent on tours were to make reports to their respective Local Governments, and such reports to be transmitted to the Government of India in the Home Department; scholars, both in India and in Europe, to be invited to transmit lists of desiderata; those in Europe to be requested to communicate with the Government of India through the Secretary of State, those in India through the Local Governments. From the suggestions so received general lists of desiderata were to be prepared and circulated annually, and the notice of Local Governments and Administrations would be drawn to entries in the catalogues received from them which seemed to refer to any work in the lists of desiderata.

Quarterly lists* of the manuscripts found during the previous quarter were directed to be submitted in the prescribed form to the Government of India in the Home Department.

Local Governments and Administrations were to use their discretion in purchasing or having copies made of the manuscripts existing within their jurisdiction. Local Governments were however reminded of the desirability of bearing in mind the subjects which European scholars should deem most valuable, and that manuscripts of the Vedas and Vedāṅgas and of their commentaries, law books, grammars, vocabularies and philosophical treatises should be regarded as of primary importance. When transcripts were made, these should be in the modern Devanāgarī character. Copies of the Sanscrit manuscripts existing in Southern India, if made in the Telugu or other Dravidian character, would be of little use to European Sanscritists and to the large majority of Native scholars.

These instructions have been carried out as follows :

BENGAL.

In Bengal the task of collecting the lists and purchasing and transcribing manuscripts was entrusted to the Asiatic Society of Bengal. Dr. Rājendralāla Mitra, aided by two Pundits or Sanscrit scholars, has been engaged by the Asiatic Society in carrying out the scheme.

He has already published twelve pamphlets containing notices of Sanscrit manuscripts extant in Bengal.

His report dated 15th February 1875, on the operations carried on by him to the close of 1874 for collecting information regarding Sanscrit manuscripts in Native libraries, is very interesting.

* These lists are now annually prepared.

RAJPUTANA.

The Governor-General's Agent at Rajputana has not reported what

From Foreign Department No. 1079 G, dated 22nd May 1876, forwarding for consideration a letter from the Governor-General's Agent at Rajputana.

progress had been made in acquiring Sanscrit manuscripts in the Native States under him up to the end of 1875. He simply submitted copy

of a memorandum by Dr. G. Bühler, Educational Inspector in the Bombay Presidency, on the catalogue of Sanscrit manuscripts in the library of the Maharajah of Bikaner, compiled by Hurrish Chunder Shastri, which had been bought for Rs. 1,000.

The Governor-General's Agent stated that the materials collected by the Shastri might be sent to Calcutta, where a competent person could be found to abstract and arrange them under supervision. He suggested that Mr. C. Tawney might be willing to receive charge of the documents and to direct their arrangement.

Dr. Bühler stated that he had examined both the library and the Shastri's work, and expressed his opinion that the latter might be used as a basis for a really useful catalogue fit for publication. He observed that the library of the Maharajah contained in all about 1,400 manuscripts. Hurrish Chunder had prepared a large voluminous compilation giving a catalogue with abstract of contents of 1,200 works. He added that to print this compilation would be very expensive and nearly useless. He suggested that a short abstract of it be made in which the books should be arranged under each Shastra in alphabetical order. The Shastri was prevented by death from preparing abstracts of the remaining 200 works.

The Government of Bengal was asked whether they could recommend any one else who would undertake to bring out the work within a reasonable time and on what terms, it being understood that Mr. Tawney was then in Europe.

On 17th August 1876, the Government of Bengal replied that either Dr. Rájendralála Mitra or the Reverend Dr. K. M. Banerjea might be relied on as being competent to perform the work in a thoroughly efficient manner. Dr. Rájendralála Mitra roughly estimated the cost of bringing out the catalogue at about Rs. 5,000. Dr. K. M. Banerjea observed that he could not himself give an opinion as to the amount of remuneration till he saw the materials he had to deal with.

The Governor-General in Council has been pleased to entrust the work to Dr. Rájendralála Mitra.

Dr. Bühler, it appears, was engaged in exploring Sanscrit manuscripts in Jeypur and Ujjain. The Governor-General's Agent does not report the result of the investigations carried on by Dr. Bühler in those places.

No report has yet been received from the Punjab.

The Governor-General in Council expresses his highest satisfaction at what has already been effected, especially by Dr. Rājendralāla Mitra in Bengal, by Drs. Bühler and Kielhorn in Bombay, and by Mr. Griffith in the North-Western Provinces. His Excellency in Council regrets that no report has yet been received of what has been done in the Punjab, where there would appear to be an unusually good field for research with such places as Amritsar, Thanesar, to which may be added Rajaor, Kashmir and Jamu. There can be little doubt that valuable results would be gained, and the Government of India trust that His Honor the Lieutenant-Governor will succeed in finding some person at Lahore or elsewhere who is competent and willing to undertake the work.

The general results which have been obtained are, in the opinion of the Government of India, such as to warrant the prosecution of the search, but the reports received from the several Local Governments and Administrations appear to His Excellency in Council to point to the desirability of re-distributing the work; and in this view the following arrangements have been suggested as appropriate :

- (a) that Rajputana, Central India and the Central Provinces should be attached to the Bombay Circle ;
- (b) that Mysore and Coorg should be attached to the Madras Circle ; and
- (c) that the North-Western Provinces and Oudh should be amalgamated into one circle, and that the work should be entrusted to one officer, or in the event of its being impossible to find such an officer that both the North-Western Provinces and Oudh should be joined to the Bengal Circle, the grant for that circle being proportionately raised.

The Governor-General in Council desires to be furnished with the opinion of the several Local Governments and Administrations as to the suitability of the re-distribution thus proposed, and to suggest that the existing list of Sanscrit manuscripts should be re-examined by some one competent, and asks, with the view of ascertaining how far it may be worth while to acquire by purchase, where possible, or to secure copies of manuscripts known to exist, that steps be taken accordingly.

His Excellency in Council further desires that the Resolution may be circulated as widely as possible, and that Sanscrit scholars may be invited to make suggestions to indicate desiderata for which it may be deemed expedient to make special search.

The SECRETARY reported that the Society had been invited by the Batavian Society of Arts and Sciences to send a representative to be present at the celebration of the first centenary anniversary of that Society to take place on the 24th April next.

The Council regretted that they were unable to send a member of their body to represent the Society, but had expressed their thanks and congratulations.

The PRESIDENT read the following extract from a letter which he had received from Lieutenant F. W. Jarrad, R. N., regarding future deep-sea dredging operations:

"Have you heard officially of the successful issue of the Asiatic Society's application to Government regarding deep-sea sounding &c. ?

"While I was in England, I drew up a Memorandum on the subject, and after consulting with several of the staff of the 'Challenger,' sent to the India Office a complete list of the sounding and dredging gear required, and also pointed out those which could be obtained from the Admiralty. The Hydrographer of the Admiralty had informed me that he would be able to let us have single specimens of most of the special appliances used, so that the Society's suggestion that these should be obtained to be used as patterns from which others might be made in India, has been carried out.

"Sir Wyville Thomson also kindly showed me all the 'Challenger' collection and explained his mode of treating them, as also the best conditions under which good results were to be obtained, and gave me a mass of information on the subject which will be most useful when we start work. He also drew up a memorandum pointing out the sections which in his opinion would be most usefully carried from several points in the Indian Ocean, and the value of such an examination, in detail, as we should be able to carry out. Besides this he has drawn up some instructions for the use of the Naturalist, and has given us the benefit of all the experience he gained during the 'Challenger's' cruise.

"Our vessel is now ordered to be built in Bombay, and I think there will be no further delay. I have just received orders to go to Bombay whenever I think it necessary, to supervise her construction, and I should think we are certain to have her ready for sea by March or April 1879.

"Before that date, will you call a meeting at the Society's Rooms, of the Natural History Committee, to consider the subject and draw up some definite plan both as regards the work to be done, the order in which it should be done and the method of dealing with the specimens, (that is by whom should they be worked up). I think this is necessary, or perhaps there will be some misunderstanding afterwards. Of course the specimens should be deposited in the Museum at Calcutta, after they have been described. Preliminary papers might be written after every working season, giving a general description of what had been done, for I presume it would take a considerable time to work up thoroughly each season's specimens.

“I should consider the serial temperature observations my particular work. What a chance we have in the Indian Ocean to work out the question of Ocean circulation; being closed to the north it offers exceptional advantages for the study of this subject, and in it I take the greatest interest.

“I think the views of the Society on the method of carrying on these investigations should be submitted to Government and orders passed on them.”

The SECRETARY announced that Dr. Rájendralála Mitra had prepared an Index to the Sanscrit works named in Rev. S. Beale's Buddhist Tripitaka, and that copies were available for distribution to Members.

DR. BRANDIS exhibited a series of specimens of timbers from different provinces of India, and explained that large collections had been made for the Paris Exhibition, which had been despatched some time ago, and that from the material which had been brought together for that purpose, a number of sets of specimens had been prepared for institutions in England, in America, on the Continent of Europe and in India.

He drew attention to the great variety of trees and shrubs found in India, the number of which he estimated at 4,000 species, one-half of which are trees. Assuming the number of Phanerogamous plants in India to be 12,000, this would give $33\frac{1}{3}$ per cent. of woody to Phanerogamous plants. In Great Britain the indigenous trees and shrubs number 163, on a total of phanerogamous plants of 1784, or 9 per cent. In the northern part of the United States the woody plants form 16 and in Japan 25 per cent. of the entire phanerogamous vegetation. In purely tropical countries, the proportion of woody among phanerogamous plants varies from 50 to 70 per cent.

One half of India is outside the tropics, a large area on the Himalaya belongs to the temperate zone, and besides this there are extensive forests which consist of one or a few species of gregarious trees; for instance the forests of Sal (*Shorea robusta*), the extensive and nearly useless forests of Sáli (*Boswellia thurifera*) on the trap hills of the Satpura range, the forests of Anjun (*Hardwickia binata*) which are common on certain classes of soil in many parts of the Dekkan and Central India, the Babool (*Acacia arabica*) forests of Sind and the Dekkan, the *Prosopis* forests on the high ground between the Punjab rivers, and the *Dipterocarpus* forests of Burma. All these gregarious forests contribute to reduce the proportion of species among trees and shrubs in the tropical and sub-tropical parts of India.

Nevertheless, even with only 33 per cent. of woody plants, the variety of trees is very great, many are not yet known even to botanists, and it is remarkable how small the number of trees is, the timber of which is an article of trade in and beyond India, and of general consumption. The number of these scarcely exceeds one hundred.

The useful timbers of India may be arranged in three great classes. The first class comprises those timbers which are durable, which season well, which are strong and handsome, and yet are not too heavy or too hard. To these belong Teak, Sisú, Blackwood, Deodar, Padouk, and others. It will be readily understood that the woods of this class are the most valuable. It is not likely that any important additions will be made to the woods of this class.

To the second class belong Sál, Súdri, Pynkadoe, Kusum, the Oaks, and many others. These woods are mostly durable, many of them are very handsome, but they are all exceedingly hard and heavy, they are difficult to work and their carriage is expensive. The number of the woods which may be placed under this class is very large, and if there were a demand for them, their number might be increased indefinitely, but there is no demand and it is not likely to spring up.

The third class consists of light woods, which are not hard and are easy to work. They are not as a rule durable, or strong, but many of them are handsome and useful furniture woods. Toon (*Cedrela Toona*) Gambhar (*Gmelldina arborea*), Mulberry, Walnut are representatives of this class which is capable of indefinite extension. A Burmese wood, Thitka (*Pentace burmanica*), now a regular article of trade, was unknown before 1860. A number of woods of this class have of late years come into notice as useful for tea-boxes, and many valuable furniture woods may be added to it.

Besides these three chief classes, there are woods valuable for special purposes, such as Sandal, Box-wood and Ebony. The Indian supply of Box-wood is small, and much attention has been paid to the discovery of a substitute. Some species of *Gurdenia*, particularly *Gardenia latifolia*, may perhaps eventually take the place of Box-wood, but none has as yet been taken up by the trade.

Some remarks regarding the structure of timbers, closed the communication.

The PRESIDENT said that the Members of the Society present at the Meeting were greatly indebted to Dr. Brandis for the opportunity he had afforded them of seeing the superb collection of specimens illustrative of the various kinds of wood obtained in Indian forests, and for the interesting remarks they had just heard. Nothing could better illustrate the

importance of the Forest Department in India, or the wealth of the country in natural products.

In the absence of Mr. BLOCHMANN, Capt. WATERHOUSE exhibited a Persian MS. and read the following note by Mr. Blochmann regarding it.

"The MS. contains the poetical works of a Dihlí poet of the name of Mír Qamar-uddin, poetically styled 'Minnat.' Warren Hastings conferred on him the title of 'Poet laureate.'

"Minnat died at Calcutta in 1793 A. D. He left numerous poems and several works on general literature. Among the poems are several well-known odes; one in praise of the Nizám of Haidarábád, for which he received a present of Rs. 5,000; and two odes on Warren Hastings and Mr. Richard Johnson. The MS. exhibited belonged to Amjad Ali, King of Lucknow, whose stamp it bears, and may be some 80 years old. Among the illuminations are two portraits, one of Warren Hastings and the other of Richard Johnson. Although the portraits are not very excellent specimens of native painting, the likeness of Warren Hastings is very good."

The following papers were read:—

1. *Stray Aryans in Tibet.*—By R. B. SHAW, Esq., C. I. E.
Political Agent.

(Abstract.)

This paper describes a small tribe of Aryan race, which is wedged in among the Tibetan populations of the Upper Indus, presenting to the student of early institutions the interesting sight of pure Aryans isolated in the semi-barbarous stage and practically unaffected by any of the great religions. Their origin is traced back to Dárdistán (the ancient *Bolor*) which they must have left before the mass of the Dárds became Musalmans. Their religion is local-demon worship; their domestic institutions are polyandrous; they are divided into three castes: priests, husbandmen, and artisans; and they preserve themselves strictly from intermarriage with the neighbouring races. They carry to an excess the Dárd peculiarity of abhorrence of the cow, so unlike the feelings of their Hindu brethren.

The paper will be published in Part I of the Journal.

The PRESIDENT said that the paper just read raised several points of extreme interest; one, with which he had been especially struck, was the extraordinary disproportion of the sexes in this curious tribe, and it was difficult to understand why there should be so much fewer women than men. It would be very desirable to ascertain some statistics of the births, and as the people appeared willing to communicate particulars concerning themselves, this might possibly be ascertained.

2. *Remarks regarding the Hæmatozoa found in the Stomach of Culex Mosquito.*—By T. R. LEWIS, M. B.

The paragraphs which have latterly appeared in Indian newspapers to the effect that it had been definitely ascertained that the cause of 'Elephantiasis' is communicated to man by means of the Mosquito have been very generally commented upon, and it has been suggested to me that a few words as to what is definitely known of the circumstances upon which the statement is based might prove of interest to the Society. Indirectly I am perhaps to some extent responsible for there having been grounds for such a view being advanced at all, as some five years ago, I drew attention to the circumstance that the blood of persons suffering from certain classes of disease in this country was infected by numerous minute nematoid parasites, each about one-hundredth of an inch in length and about the width of a red blood-corpuscle; and that all that was necessary for the demonstration of their existence in the circulation of persons so affected was to prick any part of the body with a needle, and to transfer the drop of blood thus obtained to the stage of a microscope.

One of the diseases with which these hæmatozoa were found to be associated was a form of Elephantiasis, not, however, necessarily associated with what is known as 'elephant leg', though both forms were frequently combined in the same person—a circumstance which has given rise to some confusion in pathological discussions.*

These parasites, or at least a very closely allied species, have now been detected in the blood of persons in various parts of the world—notably by Dr. Sonsino in Egypt, by Dr. Bancroft in Australia, and by Dr. Patrick Manson in China. Dr. Manson has, moreover, made the extremely interesting discovery that embryo-hæmatozoa may be detected in the stomachs of mosquitoes which have been caught preying on the bodies of persons in whose circulation these parasites exist. I had repeatedly examined, in a cursory fashion, these and other suctorial insects, but had not observed any parasites suggestive of these embryo-hæmatozoa, hence, when, on receipt of a communication from Dr. Manson a couple of months ago, a renewed search was made, I was surprised to find that four out of eight mosquitoes, captured at random in one of the servants' houses, harboured specimens of hæmatozoa to all appearances identical with those found in man in this country. After this, however, several days elapsed before any mosquitoes could be obtained which contained these embryo-nematoids, and the

* As this is purely a matter of professional interest it need not be specially referred to here: the disease in question has been carefully described by Dr. Vandyke Carter, Sir Joseph Fayrer, Dr. Kenneth McLeod and other writers, and has received various designations, *e. g.*, Elephantiasis lymphangiectodes, Nævroid elephantiasis; Lymph-scrotum; Varix lymphaticus, &c.

specimens obtained on the next occasion were devoid of the enveloping sheath, which appears to characterise the kind found in man out here, and apparently, according to Dr. Manson, in China also.

Dr. Spencer Cobbold, F. R. S., the well known helminthologist, has drawn prominent attention to Dr. Manson's observations in a recent number of the 'Lancet' [12th January], and states his conviction that the Culex mosquito is the intermediary host of the *Filaria sanguinis-hominis*—the name by which the hæmatozoon affecting man is known—and that residence in this insect is necessary for the completion of the filaria life-cycle; hence the association of the mosquito with elephantoid forms of disease. These circumstances made it therefore a matter of some interest to endeavour to learn whether enquiries of a like kind in India would prove equally conclusive in showing that one of the commonest of tropical and sub-tropical insects acted as a disseminator of blood parasites in man, and steps were taken to ascertain whether it could be shown definitely in this country also that the particular worms in question underwent undoubted developmental changes in the stomach of the mosquito.

On a future occasion I hope to give a detailed account of these observations; but, perhaps, it may be deemed sufficient on the present occasion to give in a few words the general results of the experiments so far as they have been proceeded with. Notes have not been made of all the insects examined, but out of 140 female mosquitoes [as is well known, it is the female and not male which preys on our capillary circulation] regarding the examination of which record has been kept, 20 were found to contain hæmatozoa mixed with the ingesta in the alimentary tube—i. e., equal to about 14 per cent. The method adopted has been to collect groups of insects daily and to set them aside for subsequent observation, a few living specimens of each group being examined at stated intervals. The alimentary canal with its contents was removed from the other tissues and the examinations conducted separately so as to avoid, as far as possible, the risk of confounding any developmental changes which might occur in the blood parasites with other parasites which might also be harboured by the insect, for mosquitoes like other insects occasionally harbour different kinds—three or four, what appear to me to be different varieties, have been met with in the course of these examinations. It is of prime importance in enquiries of this kind to be guarded in concluding that because two or more parasites may be associated they are genetically connected; on the other hand it must not be forgotten that it has often happened that parasites have been classified as distinct which should have been described as different stages in the development of the same animalcule.

When the insect is caught shortly after feeding and the contents of its stomach examined microscopically, the hæmatozoa, if present, will be

observed to manifest very active movements which may possibly continue for several hours on the slide. If the insect be kept for 24 hours before examination it is probable that the movements of the parasites will be more sluggish, and their form probably altered owing to irregular contractions and dilatations of their substance—changes which may also occasionally be observed when embryo-hæmatozoa are preserved on a glass slide, and they may sometimes be kept alive thus, if in suitable media, for two or three days. When the insect is not examined till the third day, the contained parasites will probably manifest marked signs of disintegration—and possibly every indication of life will have disappeared from many of the specimens. After the third or fourth day I have not seen any active specimens of these entozoa in the stomach or in any part of the alimentary canal of the mosquito, those which remain have undergone more or less fatty degeneration, are readily stained with eosin, which, as far as my experience goes, is not the case so long as they are alive and active. After the fourth or fifth day it is very rare that traces of any hæmatozoa-like objects can be detected at all, so that it must be inferred either that they have succumbed to the digestive action of the insect's stomach,* or been disposed of along with the excreta. It will of course be understood that these remarks refer solely to the results of personal observations which have up to the present time been made in India—it is quite possible that a more extended knowledge of the subject may modify the conclusions which at present it seems natural to draw. In the meantime I cannot say as a result of direct observation that the mosquito serves as the intermediary host to the development of the *Filaria sanguinis-hominis* or other nematoid hæmatozoon.

It may further be remarked that it would seem that in this country the mosquito obtains its hæmatozoa in great part from pariah dogs; the blood of fully one-third of which, as I had occasion to point out a few years ago, is infested with microscopic parasites closely resembling those found in man.

[ADDENDUM:—A few days after the Meeting an incident occurred which materially aided in elucidating this matter. It was observed that nearly all the mosquitoes captured in one of the servants' houses contained hæmatozoa, so that the supply of suitable insects in all the stages of their growth became amply sufficient for all requirements. The result of the

* Leuckart mentions that a similar result was observed by Fedtschenko to follow the ingestion of dracunculus-embryos in the stomach of the *Cyclops*. The latter is believed to serve as an intermediary host for the development of the Guinea-worm—the embryos, however, gain access to the body of the *Cyclops* by piercing the cuticle. When the embryos are swallowed they are digested.

examinations under these favourable conditions has shown that although the stomach digests a great number of the ingested hæmatozoa, as mentioned above, nevertheless others actually perforate the walls of the insect's stomach, pass out, and then undergo developmental stages in its thoracic and abdominal tissues. Although I cannot say as a result of actual observation that the links connecting the various earlier phases of the development are complete, nevertheless they appear so near to being so that it may, I think, be confidently anticipated that observers in this country will soon be able conclusively to satisfy themselves that, in most particulars at least, Dr. Manson's valuable observations apply to India as well as to China.

With regard, however, to the inference that the mosquito is the particular intermediary host of nematoid hæmatozoa, it cannot be said that even these later observations are sufficiently conclusive to warrant a positive statement being made at present, for, though assuming that of the various parasitic forms which have been seen, several are actually transitional stages in the development of one and the same entozoon, it is to be noted that even the most advanced stage hitherto observed is still a very immature one—no trace of reproductive organs, for example, being distinguishable; and every attempt hitherto made by myself to obtain a more advanced condition has proved unsuccessful. Further observation, however, may overcome or explain this want of success.

It should be added that the blood of one of the five persons who were in the habit of sleeping in the house in which these particular insects were captured, was found to contain hæmatozoa in considerable numbers. [T.R.L.]

Dr. McLEOD observed that the subject of Dr. Lewis's paper was one of very deep interest, inasmuch as the diseases attributed to, or associated with the presence of, immature *filariæ* in the blood are very serious, and, if the mosquito is the agent of their dissemination, everybody living in countries infested by mosquitos, is more or less liable to them. The theory of the mosquito being an intermediary agent of the development of *Filaria sanguinis-hominis* has been laid down in very plain and positive terms. It is satisfactory to find that, so far as observations made in India have hitherto gone, instead of undergoing development in the mosquito's stomach, these hæmatozoa undergo digestion. The only weak point which occurred to him in Dr. Lewis's observations was that the animals were kept for observation in more or less artificial conditions, and not allowed access to water, which is alleged to be an important medium of the development of these *filariæ*.

There is no question now that these animals exist in the mature state in the human tissues and in the immature state in human blood. How they gain access to the body originally is unknown. Given the mature

worm in the tissues, there is no difficulty in accounting for the immature progeny in the blood, but whence comes the parent? This remains to be discovered. The subject is still very obscure. It is, for example, by no means certain that hæmatozoa exist or have existed in every case of elephantiasis, or that there is a causal relation between the two phenomena, at any rate as regards the most common form of elephantiasis. Dr. Lewis, who has already done such good original work in this field, will no doubt add much to our information on the subject.

3. *On some Mammals from Tenasserim.*—By W. T. BLANFORD, F. R. S.
(Abstract.)

The animals noticed in the present paper are from two collections, one made by Mr. W. Davison for Mr. Hume, to whom the writer is indebted for a very valuable series of skins, the other made by Mr. Limborg.

The localities, sexes, and, in many cases, the measurements taken on the animal when freshly killed have been carefully recorded. The following mammals, not previously known to occur in British territory, have been added to the Tenasserim fauna, *Gymnura Rafflesi*, the Malayan form of *Martes flavigula* and *Tragulus napu*. It is shewn that the first named, however, differs from the descriptions hitherto given in having non-retractile claws, and this may indicate that the Tenasserim animal is distinct, but it agrees in all other respects so well with the Malayan form, that a difference of this importance is improbable. Some peculiar imbricate scales below the tail are also noticed, and a few details of the animal's habits from Mr. Davison's notes.

Besides the species mentioned full descriptions are given of *Prionodon maculosus* and *Sciurus rufigenis*, already described at the February meeting, and notes are added upon *Tupaia Peguana*, *Sciurus atridorsalis*, *S. Phayrei*, *S. coniceps*, *S. Mouhoti*, shewn to be possibly distinct from *S. Berdmorei*, or if not distinct a very marked variety, not previously recorded from Tenasserim, *S. Barbei*, *Pteromys cineraceus*. A variety of *Rhizomys castaneus*, and *Mus robustulus*.

The paper will be published in Part II of the Journal.

4. *On a Copper-plate Grant from Banda.*—By DR. RÁJENDRALÁLA
MITRA, RÁI BAHÁDUR, C. I. E.
(Abstract.)

The deed of grant was originally inscribed on two copper-plates, one of which is lost. The one remaining comprises the whole of the deed except a few imprecatory verses. It is dated Samvat 1191 = A. D. 1135, and records the grant of "ten ploughs" of land to a Bráhmaṇa by

Madanavarma Deva of the Kálinjer dynasty. The author of the paper, when he noticed the Khajraha Inscription of Dhánga in 1866, calculated the date of Madanavarma to be 1150, but then he had to deal with a name—that of Sallakshnavarma—which stood in the place of the grandfather of Madanavarma, and assigning him an average reign of 16 years, he had to remove the last prince by the same number of years. This name, however, now appears to be an *alias* of Kirtivarma, the real grandfather, and omitting the period assigned to him, the chronology is now established on a sure foundation. As far as is yet discovered, the dynasty comprises fifteen generations, of which the dates of three have been taken from dated inscriptions, and the rest inferred by casting averages.

The paper will be published in the Journal, Part I.

5. *On the representation of Foreigners in the Ajantá Frescoes.*—By DR. RÁJENDRALÁLA MITRA, RÁI BAHÁDUR, C. I. E.

(Abstract.)

After pointing out the history of the enquiries made from time to time into the archæology of the Caves of Ajantá, the author dwells upon six fresco paintings in Cave No. I. One of these, representing a court scene, he points out, shows several figures of ancient Persians. The complexion, the features, the long sugar-loaf hats, and the long coats of these figures are, he thinks, characteristic of the Persians, and could not be attributed to any other nationality of ancient times. In four other plates, there are representations of stout, burly, square-faced people of fair complexion and very peculiar turbans or hats, very like the Kilpaks of the modern Central Asiatics. These can be either Afghans or Bactrians, the author is disposed to take them for the latter. Two peculiarities in the dress of these are specially noticed; one is the use of striped stockings, and the other of patch-work embroidery. The Afghans and the Jews in the present day excel in the art of patch-work embroidery, but the cast of the face is so unlike that of the Jews, that the figure wearing such decorations cannot be assigned to the Hebrew race, and the alternative is therefore left between Afghans and Bactrians. For historical reasons the author doubts their being Scythians. In another plate is noticed the use of a short jacket of flowered muslin, very like the *mirjai* of the modern Indians. Mention is, likewise, made of some figures which have the characteristic thick lips and chubby nose of the Negroes.

The paper will be published in Part I of the Journal.

LIBRARY.

The following additions have been made to the Library since the Meeting held in February last.

TRANSACTIONS, PROCEEDINGS, AND JOURNALS,
presented by their respective Societies or Editors.

Bombay. The Indian Antiquary,—Vol. VII, Part 76, February 1878.

J. F. Fleet.—Sanskrit and old Canarese Inscriptions, Nos. 35 to 37. *A.*

C. Burnell.—Where was the Southern Charitrapura mentioned by Hi-wen Tshang? *M. J. Walhouse*.—Archæological Notes, Nos. 17 and 18.

Dalpatrām Pranjivan Khakar.—History of the Kānpātās of Kachh.

Bordeaux. Société de Géographie Commerciale, de Bordeaux,—Bulletin, Nos. 2 and 3, 2nd Series. Janvier and Fevrier, 1878.

Boston. American Oriental Society,—Proceedings 1873, 1874, May and November 1875, and May 1876, November 1876, and May and October 1877.

Nov. 1876 and May and Octr. 1877. *Rev. C. H. Wheeler*.—On the Kurmanji Kurdish. *Prof. John Avery*.—On the influence of the Aryans upon the Aboriginal Speech of India. *Rev. J. Chamberlain*.—On the Telugu Language.

Budapest. Természetrájszi Füzetek,—Fuzet II, and III, (Aprilis-Junius), 1877 and Fuzet IV, (Oktober-Deczember), 1877.

Calcutta. The Indian Medical Gazette,—Vol. 13, No. 2, February 1878.

———. The Agricultural and Horticultural Society of India,—Journal Vol. 5, Pt. III, 1878.

S. Kurz.—The Banana; a Pomological contribution.

———. Geological Survey of India,—Memoirs, Ser. IV, 2, 1878.

Sir P. de M. G. Egerton.—On some remains of Ganoid Fishes from the Deccan.

L. C. Miall.—On the genus *Ceratodus* with special reference to the Fossil Tueto found at Maledi C. India. *W. T. Blanford*.—On the Stratigraphy and Homotaxis of the Kota-Maledi deposits.

———. Mahābhārata,—Vol. III, No. 18.

———. Rigveda Sanhita,—Vol. 1, Pts. 5—6.

Hartford, U. S. The Ninth Annual Session of the American Philological Association, 1877,—Proceedings.

London. The Athenæum,—Nos. 2621—2624, 1878.

———. The Geographical Magazine,—Vol. V, No. 1, January 1878.

R. Cust.—Language-Map of the East Indies. The North-Western Frontier of India. The Ancient Silk-Traders' Route across Central Asia.

London. Nature,—Vol. 17, Nos. 428—432, 1878.

Palermo. La Società degli Spettroscopisti Italiani,—Memorie, Dispensa, 11^a—12^a, 1877.

Dis. 11a. *P. Ferrari*.—Eruzione Solare metallica osservata al Collegio Romano il 7 novembre 1877,—Riassunto dello protuberanze solari e delle macchie osservate alla Specola del Collegio Romano nel luglio 1877. *P. Ferrari e da P. Tacchini*.—Imagini spettroscopiche del bordo solare osservate a Roma e Palermo nell'ottobre 1876.

Dis. 12a. *A. Rizzo*.—Alcune eleganti esperienze ottiche. *P. Tacchini e G. De Lisa*.—Macchi solari e facole osservate a Palermo nei mesi di ottobre, novembre e dicembre 1877.

Paris. La Société de Géographie,—Bulletin, Novembre, 1877.

J. Thoulet.—Note sur les projections stéréographiques, avec clichés dans le texte.

Roorkee. Professional Papers, on Indian Engineering,—Vol. 7, No. 27, January 1878.

BOOKS AND PAMPHLETS,

presented by the Authors.

CHAMBERS, FRED. Brief Sketch of the Meteorology of the Bombay Presidency, in 1876. Pamphlet. 1876.

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PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL.

FOR APRIL, 1878.

The Monthly General Meeting of the Asiatic Society was held on Wednesday, the 3rd April, at 9 o'clock p. m.

W. T. BLANFORD, F. R. S., President, in the Chair.

The Minutes of the last Meeting were read and confirmed.

The following presentations were announced :—

1. From the Home Department, Government of India, a copy of a work entitled, "Corpus Inscriptionum Indicarum, Vol. 1, Inscriptions of Asoka." By General A. Cunningham, C. S. I.

2. From J. Wood-Mason, Esq., the following pamphlets :—

Note on *Mygale Stridulans*. Description of a new species of *Phasmidæ* from India. On a small collection of Orthopterous Insects of the families *Phasmidæ* and *Mantidæ* from Australia and New Britain, with descriptions of four new species. Notes on new and little known *Mantidæ*. On the discovery of Stridulating Apparatus in Scorpions. Preliminary notice of a species of *Phasmidæ* apparently possessing all the Structural Arrangements needed both for Aerial and Aquatic Respiration.

3. From the Author, "Eine Liste von Rajmahali-Wörtern. By T. Aufrecht."

4. From the Hon. Sir Edward Bayley, K. C. S. I., several copies of old Journals of the Asiatic Society, and a Persian MS. entitled "Zafar-namah-i-Alamgírí."

5. From the Government of Bengal "A Statistical Account of Bengal," Vols. VI—XIX. By Dr. W. W. Hunter.

6. From J. Rudd Rainey, Esq., Kúlna, Jessore. A silver coin found in the village of Rámnagar, near Kúlna.

The following gentlemen, duly proposed and seconded at the last Meeting, were elected ordinary Members—

F. R. Mallet, Esq.

Alfred Simson, Esq.

The following are candidates for ballot at the next Meeting—

1. James Copley Moyle, Esq., Barrister at Law, High Court, Calcutta, proposed by W. Swinhoe, Esq., seconded by Capt. J. Waterhouse.

2. The Hon'ble L. S. Jackson, C. S., Judge of the High Court, (for re-election), proposed by Captain J. Waterhouse, seconded by W. T. Blanford, Esq.

3. R. Griffith, Esq., Allahabad, (for re-election), proposed by Captain J. Waterhouse, seconded by A. W. Croft, Esq.

4. P. Donaldson, Esq., Calcutta, proposed by Dr. D. D. Cunningham, seconded by Captain J. Waterhouse.

5. C. J. Sharpe, Esq., Calcutta, proposed by Dr. D. D. Cunningham, seconded by Captain J. Waterhouse.

6. James A. Murray, Esq., Kurrachee Municipality Library and Museum, Frere Hall, Kurrachee, proposed by Captain J. Waterhouse, seconded by H. Blochmann, Esq.

The SECRETARY announced that Mr. H. F. Blanford had compounded for his subscriptions by a payment of Rs. 100.

Mr. BLOCHMANN exhibited five silver coins found at a place called *Hau Kadool* about 25 miles S. E. of the town of Sittang, received from the Honorary Secretary of the Phayre Museum, Rangoon.

Dr. RÁJENDRALÁLA MITRA, to whom the coins were referred, writes regarding them as follows :

“ I return herewith the five silver coins received from Mr. Hardinge. They belong to the same group which Capt. Latter described as the “Symbolical Coins of Arracan.” (Journal, A. S. B., Vol. XV, p. 238), and Capt. Fryer as of the Vaisali dynasty of Arracan (Journal, A. S. B., Vol. XLI, p. 203). Captain Fryer's coin, however, has the Sivite emblem of the Bull, whereas the new ones bear the Vaishnavite Conch-shell. The symbols, however, are not very decisive indications of the faith of those who struck them. The Conch-shell is as largely used by the Buddhists as the Vaishnavas, and the most prominent mark on the foot-prints of Buddha is a Conch-shell. The Bull is seen on many old Buddhist coins. Capt. Latter's coins have inscriptions, but those received from Mr. Hardinge have none, and this want prevents me from attributing them to their owners. This much, however, may be unhesita-

tingly said that the coins belong to the mintage of the Arracan kings, and they were all Buddhists. Of the three names given by Fryer the last (c) has been incorrectly read by Bábu Pratápa Chandra Ghosha. It is unmistakably *Sri Vijaya*, and not *Sri Vikrama*. None of the names, however, occur in Mr. Paton's list of Arracan kings published in the sixteenth volume of the *Researches*.

Mr. BLOCHMANN also read the following extract from a letter from Dr. Mitra announcing the discovery of a new Era :

"I have made a grand discovery, nothing less than a new era—that of Lakshmana Sena. It is still current among the Pandits of Tírhút. My travelling pandit, now at Darbhanga, is collecting information on the subject. It will settle the age of the Senas beyond all cavil, upsetting at the same time Cunningham's date of the Pála kings of Bengal."

Mr. H. F. BLANFORD exhibited two autographic records of recent Nor'-Wester storms which occurred on March 8th and 14th ; the one accompanied by a slight fall of rain, the other without rain. The records consisted of the photographic traces of the barograph, and the dry and wet bulb thermometers ; the direction and movement of the wind, registered by a Beckley's anemograph ; and the trace of Beckley's hyetograph showing the rainfall. As all the traces are continuous they shew all the changes that took place during the storms and afford the means of correlating these with each other.

The two sets of traces agreed in many points. In both the evenly-waved line which marked the diurnal barometric tides, was suddenly interrupted just before the storm by an abrupt rise of pressure. This was followed in both by a rapid veering of the wind from S. S. W. to West in one case, and through West and North to East in the other, and a considerable increase in its velocity ; and in both storms also by an abrupt fall of the wet-bulb thermometer through several degrees (10° in the rainless, and 9° in the rainy storm). But, whereas in the rainy storm the dry-bulb thermometer also fell through 8° , in the rainless storm it rose as abruptly through $4\frac{1}{2}^{\circ}$, this change, be it observed, occurring at 10 P. M. At the temperatures observed these changes in the rainless storm of the 14th March, indicate a fall in the humidity of the air from 83 to 34 per cent., the whole of which was accomplished in half an hour, the greater part indeed within about 10 minutes.

The rise of temperature in a storm which is accompanied by little or no rain, though rare, is not now recorded for the first time. A similar occurrence took place at Calcutta on the 20th May 1870, between 7 and 10 P. M., and was described by Col. Tennant in the Proceedings of the London

Meteorological Society, Vol. V, p. 213. On this latter occasion some rain fell in the earlier part of the storm, and before it had quite cooled was accompanied by a distinctly hot and dry wind, which lasted, however, only for a short time, and was followed, as is usual in Nor'-Westers, by a calm.

Mr. BLANFORD said that having regard to all the circumstances of these storms, he could not regard the rise of temperature as due to the influx of a hot surface-wind, but considered it more probable that it was a case of dynamic heating. As Mr. Phear had pointed out at a former meeting of the Society, the strong gusty wind of a Nor'-Wester is probably a portion of the upper Westerly current that strikes down to the earth. Such a mass of air in descending must, according to thermo-dynamic laws, develop 1° of temperature for each 183 feet through which it descends. In rainy storms this heat is probably used up in great part in the evaporation of the accompanying rain, but in storms in which little or no rain occurs during the descent, a part of this heat is retained and causes a rise of the thermometer and a great fall in the humidity of the air.

Mr. H. F. BLANFORD also exhibited a series of the charts now drawn up in the Meteorological Office, which show the distribution of pressure and temperature, the wind direction and the rainfall at 10 P. M. daily for the whole of India. The two former elements are shown by blue and red lines which respectively represent the isobars for each twentieth of an inch and the isotherms for each 5° of temperature. The series began with October last, and as yet it would be premature to attempt to generalize on the facts they exhibit, but he drew attention to one or two cases of rainfall during the cold weather months, and contrasted them with the charts exhibited on a former occasion, which had been specially drawn up to show the state of things that accompanied the rainfall of the S. W. monsoon. These latter showed that during the S. W. monsoon, barometric minima or cyclones (not of a violent character) were successively formed either in the N. W. corner of Bengal, or over Orissa and the country to the westward, and, in 1875, moved northward or north-westward, carrying the rain with them to the Gangetic valley and the Central and Upper Provinces. During the season of 1877 they had not followed this latter course, but in many cases had moved towards the north-east, whence the almost entire failure of the rainfall in the N. W. Provinces.

In the cold weather months, again, the state of things was different. There was a constant tendency to a high pressure in the lower Indus valley; but to a frequent recurrence of low-pressure areas in the Punjab, where it appeared that the rain first fell. This fall was followed by a strong cool current from the North-West, and the rainfall area then receded down the Gangetic valley and in some cases reached Lower Bengal.

The following papers were read :—

1. *A Legend regarding the origin of the name Chháyápati or "Lord of the Shadows," a small Tálug in Pargana Hoglá, Zilá Jessore.—By H. JAMES RAINEY.*

To any one acquainted with the vernacular language of Lower Bengal, the designation Chháyápati is sufficiently striking to awaken curiosity regarding its origin, as it signifies "Lord of the Shadow," from *chháyá* (ছায়া), "Shadow," and *pati* (পতি), "Lord." Finding it among the names of one of the minor *tálugs* in my family *zamindaris* situate in *Parganá Hoglá*, I naturally enquired about it, but for some time was unable to obtain any specific information regarding it. At last the following precise account of the derivation was narrated to me by an aged Bráhmaṇ, and, I think, it may be fairly presumed to be substantially correct.

An ancestor of the present owners of the *tálug*, a high caste Bráhmaṇ famed for his piety, became a defaulter of rent of his holding, and the *zamindár* being unable to realize it, despatched him with others in a like position, as usual in such cases, to the Court of the Nawáb, then held in Murshidábád. The defaulters being brought before the Nawáb, various punishments, more or less severe, were imposed on them, to compel them, if possible, to discharge the arrears of rent due by them. That allotted to the Bráhmaṇ, was, that his head should be shaved, well smeared with oil, and exposed to the full blaze of the sun. The Nawáb looked calmly on as the unfortunate Bráhmaṇ was placed in the centre of the Court-yard, when, suddenly, a dense cloud passed over the face of the sun, and it was thoroughly obscured, leaving him perfectly in the shade. The reputation acquired by the aged Bráhmaṇ for austere devotion and sanctity being well known to the assembly, the by-standers exclaimed "a miracle ! a miracle !" The Nawáb immediately ordered the release of the Bráhmaṇ, and granted to him his holding at a nominal rental. And, in order to commemorate what he deemed to be nothing less than a miraculous event, he changed the name of the tenure to *Chháyá-pati*, which it has retained ever since. The former name of the place is not known.

The event here related is said to have occurred some time before the British assumed the Government of the country, about a century and a half ago.

2. *An Account of the Tidal Observations in the Gulf of Cutch conducted by the Great Trigonometrical Survey under the superintendence of COLONEL J. T. WALKER, C. B., R. E., during the years 1873-74-75. Compiled from the G. T. Survey Reports by CAPTAIN J. WATERHOUSE, Assistant Surveyor General.*

(Abstract.)

This paper contains an account of the operations connected with, and the final results of, the first series of Tidal observations made, in seasons 1873-74 and 1874-75, by a party of the Great Trigonometrical Survey under Capt. A. W. Baird, R. E., with the primary object of determining the existing relations between the level of the land and the sea at certain points on the coasts of the Gulf of Cutch, as a first step towards investigating the question whether progressive changes are taking place in the level of the land at the head of the Gulf, as has long been supposed to be the case.

The paper will be published in full in the Journal, Part II.

COLONEL WALKER observed that the reduction of tidal observations is a very laborious matter, but that when once the values of the two constants—the amplitude and the epoch—have been determined for each of the several hypothetical tides and their sub-tides, the varying height of the surface of the ocean, from hour to hour and from day to day, may be graphically represented, with great facility and rapidity, by an instrument recently invented by Sir William Thomson, which is at present in the collection of scientific instruments at South Kensington.

He showed that any one of the constituent tides might be graphically represented by the action on a rotating cylinder—such as the barrel of an ordinary self-registering instrument—of a pencil connected with a point in the circumference of a revolving wheel. When the wheel is suspended vertically and the pencil is held in a vertical groove, so as to be free to move up and down against the barrel, the pencil is made by its connection with the point on the wheel to travel backwards and forwards through a distance equal to the diameter of the wheel, and it thus describes, on the surface of the rotating barrel, a curve of which the ordinates are equal to the height of the point above the centre of the wheel at any moment, while the *abscissæ* denote the times corresponding to the heights. Just as a single tide can thus be graphically delineated, so may the resultant of a large number of tides be represented. In Sir Wm. Thomson's machine, as many wheels as there are tides are constructed, the radius of each wheel being made to correspond with the amplitude of the tide it has to represent; the wheels are centered to a vertical frame, half of them above and the other half below an axle by which each wheel is driven and caused to revolve on its axis with a velocity corresponding to that of its tide. To the circumference of each wheel a stud is attached at a point corresponding to the epoch of the tide. A silk thread is fastened to the stud of the wheel most distant from the pencil in the upper row, it is then brought down and passed round the stud of the wheel immediately below, then carried up to and over that of the next wheel above, and so on until, eventually, after having been passed round

the stud of each wheel in succession, it is fastened to the recording pencil. The curve traced by the pencil now represents the aggregate result of all the component tides corresponding to the several wheels, that is to say, it represents the momentarily varying level of the surface of the ocean at the station where the observations were taken. Though the ordinary motion of the pencil is up and down, there is an arrangement by which the pencil is slightly jerked to one side after a certain number of revolutions of the driving axle; this is done to mark the successive hours on the curves. At spring tides the range between high and low water is considerable and the hour-marks are far apart; while at neap tides the range is much less and the hour-marks are correspondingly closer.

One of the great advantages of this instrument is that with its aid the sea-surface curves for an entire year can be drawn in about three hours; while a skilful computer would probably take a month to obtain the same results by calculation. A new instrument of this kind is now being constructed in England with all Sir William Thomson's latest improvements, for the use of the Survey Department, and it will be of great value and assistance in the preparation of Tidal Tables for the several Indian ports, a duty which the Government have lately imposed on that Department.

MR. H. F. BLANFORD asked Colonel Walker whether the discussion of the barometric and anemometric data in conjunction with those of the tidal registers of the Gulf of Cutch would throw any light on the respective influence of pressure and wind-friction in piling up the surface of the ocean. The storm wave that accompanies cyclones is an instance of the combined action of these two agents, and it would be interesting to know in what measure they were severally effective.

COLONEL WALKER replied that at one of the tidal stations, Hanstal, the changes of wind and pressure were so nearly synchronous that it was impossible to separate the effect of the wind from that of the pressure. At another station, Okha, very fairly reliable measures of the same effect of each were obtained. They are given at the end of the analysis of the observations.

3. *Recent Trans-Frontier Explorations. Communicated by COLONEL J. T. WALKER, C. B., R. E., Surveyor General of India.*

(Abstract.)

This communication consists of an extract from the last Annual Report of the Great Trigonometrical Survey, giving an account of the explorations made by one of the G. T. Survey explorers, called the 'Mullah,' during the year 1876, up the course of the Indus from the point where it enters the plains above Attock to the point where it is joined by the river of Gilgit, which had up to the present time remained a blank on the maps.

The paper will be published, with map, in the Journal, Part I.

After reading the account of these explorations, Col. WALKER remarked that wherever the Mullah struck on routes which had been surveyed by the lamented Lieut. Hayward there was a very satisfactory accordance between the results of the two explorers, which was the more satisfactory in that they were obtained quite independently. He also stated that very remarkable testimony to the accuracy of Lieut. Hayward's work had been afforded by the circumstance that several peaks on an important range of hills between the Karambar and the Nagar valleys to the North-West and North of Gilgit, of which the positions had been determined by Lieut. Hayward, have recently been found to have been fixed by the operations of the Trigonometrical Survey, without his knowledge; and the accordance between the Trigonometrical results and his is sufficiently close to show how careful and accurate that portion of his work must have been.

Dr. CAYLEY said—When stationed in Tibet I often heard the native merchants, especially those from Swat and Bajaur, describe their route through Bajaur and then by Wakhan and the Pamir to Yárkand. This was indeed a regular well-known trade route, though the country was but little known to us, and until the recent explorations just described, only very roughly marked in our maps.

I frequently met Hayward during his travels in Tibet, and was always much struck with his untiring energy and enthusiasm and his little regard for his personal safety and comfort when surveying and exploring.

I met him in Kashmir just after his return from his first visit to Yasin, and it is very gratifying to know that the observations that he took and the survey operations he carried on under such great difficulties and when so jealously watched, were so carefully and accurately done, as confirmed by the recent observations of Col. Walker's native surveyor.

4. *Sixth List of Birds from the N. E. Frontier of India.*—By LIEUT.-COLONEL H. H. GODWIN-AUSTEN.

(Abstract.)

This paper contains a list of birds collected in the Eastern Nágá Hills by Mr. A. W. Chennell, and in the low hills near Sadiya and the neighbourhood of the Brahmakhúnd by Mr. W. T. Ogle, during the progress of the Topographical Survey for two seasons.

One new species, *Abrornis flavogularis*, is thus described.

Above, ash-grey, purer grey on rump, rather darker on the head; wings pale umber-brown, tail ash-brown, the two outer feathers white on the inner web, the next with a narrow edging of white. Lores white, ear coverts white and grey; chin pure yellow, fading on throat; breast, nape, flanks and thighs, greyish white, whitest on the breast; a very faint yellow

tinge on the abdomen; under tail coverts white; a small patch of yellow on inner shoulder of the wing. Bill dark above, buff below. W. 1.84 inches; T. 1.8; t. 0.67; Bf. 0.3.

Habitat; Sadiya, (Mr. Ogle). This species is nearest to *A. xanthoschistus*, having the same colouration of the head and form of the bill, it is distinguished from all other species by its entirely ashy upper surface.

The paper will be published in the Journal, Part II, with 2 plates representing *Garrulax nuchalis*, G.-A. and *Actinura Oglei*, G.-A.

LIBRARY.

The following additions have been made to the Library since the Meeting held in March last.

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- No. 6. *M. J. A. Broun*.—Nouvelles observations relatives aux relations entre les phénomènes du magnétisme terrestre et la rotation du Soleil.
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PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL.

FOR MAY, 1878.

The Monthly General Meeting of the Society was held on Wednesday the 1st May at 9 $\frac{1}{4}$ o'clock P. M.

W. T. BLANFORD, Esq., F. R. S., President, in the Chair.

The following presentations were announced—

1. From the Russian Geographical Society, back numbers of their publications, and other books, including a copy of "Reisen in Süden von Ost-Sibirien in den Jahren 1855-1859", by Gustav Radde.

2. From the British Museum, a copy of "The Gigantic Land Tortoises (living and extinct) in the collection of the British Museum," by A. C. L. G. Gunther.

3. From Lieut. R. C. Temple, 21st R. N. B. Fusiliers, a copy of the "Transliteration of the Burmese Alphabet into Roman characters, and a note on the Vocal and Consonantal Sounds of the Peguan language." Also "The Lord's Prayer in the South Andaman language."

The following gentlemen, duly proposed and seconded at the last meeting, were elected Ordinary Members—

1. James Copley Moyle, Esq.
2. The Hon'ble L. S. Jackson (re-elected).
3. R. Griffith, Esq. (re-elected).
4. P. Donaldson, Esq.
5. C. J. Sharpe, Esq.
6. James A. Murray, Esq.

The following are candidates for ballot at the next meeting—

Charles Steuart Bayley, Esq., C. S., proposed by W. T. Blanford, Esq., seconded by Capt. J. Waterhouse.

Lieutenant R. C. Temple, 21st R. N. B. Fusiliers, Dharmasala, proposed by Capt. J. Waterhouse, seconded by H. Blochmann, Esq.

The SECRETARY announced to the Meeting that news had been received of the death of Dr. P. Bleeker, Corresponding Member of the Society.

Also that Mr. G. S. Leonard, the Assistant Secretary, had resigned his appointment, and that the Council had nominated Mr. W. E. Bateman to the vacant post on trial.

The SECRETARY read the following letter from Mr. J. O'Kinealy, Offg. Secretary, Government of India, Home Department, in reply to a communication of the Council on the subject of the Indian Treasure Trove Act, VI of 1878.

No. $\frac{18}{761-71}$.

From

JAMES O'KINEALY, Esq.,
Offg. Secretary to the Govt. of India.

To

The Secretary to the Governments of Madras, Bombay, Bengal, N. W. Provinces, Oudh, and the Punjab.

The Chief Commissioners, Central Provinces, British Burma, Mysore, Coorg, and Assam.

The Resident at Hyderabad, and the Superintendent of Port Blair and the Nicobars.

Fort William, the 3rd April, 1878.

SIR,

With reference to the Indian Treasure Trove Act, VI of 1878, I am directed to request that the necessary orders may be issued to Collectors that, unless there is some strong reason to the contrary, whenever two or more coins of the same kind are found, the Asiatic Society, Calcutta, may be allowed the option to purchase one of them; and that in all cases in which notice may be received of coins having been found, the Collectors should communicate the information to the Asiatic Society.

I have &c.,

JAMES O'KINEALY,
Offg. Secretary to the Govt. of India.

No. 772.

Copy forwarded to the Honorary Secretary, Asiatic Society of Bengal, with reference to his letter No. 113, dated the 15th ultimo.

J. O'KINEALY,
Offg. Secretary to the Govt. of India.

CAPT. WATERHOUSE exhibited a photograph of part of the sun's disc, obtained by M. Janssen at the Observatory of Meudon, near Paris. He said: The photograph I have the pleasure of exhibiting is one published in the *Annuaire du Bureau des Longitudes*, Paris, for 1878, and represents a small portion of the solar disc enlarged from one of M. Janssen's negatives taken on the 10th October 1877, at 9*h.* 36*m.* On M. Janssen's negative the diameter of the sun's disc was 305 *mm.*, or about 12 inches, and it has been enlarged three times, consequently the full diameter of the disc as represented in part in the photograph is 0*m.*·92, or about 36½ inches.

The photograph is accompanied by an explanatory note by M. Janssen, in which he lays down the principles that have guided him in making these photographs, and the following is a brief abstract of it.

Up to the present time photography, considered as a means of describing the surface of the sun, has remained much inferior to eye observations with large instruments.

Photographs on which the sun's image is not more than 4 or 5 inches in diameter cannot show the structure of the photosphere, but this is indispensable towards making any progress in solar knowledge.

The study of the solar spots, which for the last two centuries and a half has furnished almost the only data on the constitution of the photosphere, seems now almost worked out, or, at least, it ought to be supplemented henceforth by the study of the photosphere itself.

The study of the photosphere by eye observations is attended with great difficulties, the chief of which is the impossibility of clearly recognising the form of the granulations in the midst of the flaming photosphere, or to measure them and, still less, to identify them in order to follow their changes.

Consequently it would be an immense advance in solar knowledge if photography could give us images of the sun's surface, showing the details sufficiently clearly to permit this study; it would also be a foundation of future progress and discoveries.

The solution of this problem has occupied M. Janssen from the time that he commenced these solar photographic observations.

On considering the conditions under which solar photographs had hitherto been taken, M. Janssen found that the principal cause which prevented the details of the solar surface from appearing on the photographs was photographic irradiation, by which the images of bright objects are enlarged; and it is therefore evident that if the details of the granulation of the solar surface are smaller than the amount of this irradiation, it will be impossible to obtain them with any sharpness.

M. Janssen considered that the solution of the difficulty was in enlarging the image, combined with a diminution in the time of exposure.

There is thus a triple chance of success. First, because the irradiation diminishes rapidly with the increase in diameter of the images, especially if the exposure is lessened at the same time ; secondly, because the dimensions of the details are enlarged, and therefore the details ought to be more easily obtained ; finally, the defects of the sensitive surface are of less relative importance.

There is another circumstance which, in this case, is particularly favourable for obtaining very well defined images. In short exposures, the photographic spectrum is reduced to a very narrow band and the rays which act belong to a little group almost monochromatic.

The optical spectrum is on the contrary very extended, and therefore photography may be expected to yield much better defined images than can be obtained by eye observation.

It is true that the photographic difficulties increase with the size of the image, but these difficulties can be overcome by care and perseverance.

M. Janssen has, therefore, since the commencement of these studies in 1874, constantly endeavoured to obtain the solar images larger and larger, advancing from between 4 and 5 to 12 inches in diameter.

At the same time as the dimensions were increased, the composition of the sensitive surface and the mode of development were improved. The development of the image ought to be very gradual, commencing with iron and finishing with pyrogallie acid and silver.

The greatest care must be taken in the focussing and in giving an even exposure all over the plate.

The length of exposure is very short. In summer it is between $\frac{1}{3000}$ and $\frac{1}{2000}$ of a second for the images of 12 inches diameter.

In consequence of the very short exposure the development is slow, but then the image appears in all its details, free from irradiation, and shows the phenomena we have now to consider.

The photographs show the solar surface covered with a fine general granulation, the form, dimensions and arrangement of the granular elements being very variable. In size they vary from some tenths of a second to 3 or 4 seconds. The forms are circular or more or less elongated ellipses, but often these regular forms are altered.

The granulation is visible everywhere and does not seem to possess a different composition towards the poles of the sun. The luminous power of the granular elements considered separately is very variable. They appear to be situated at different depths in the photospheric layer.

The most luminous granulations only occupy a small portion of the surface of the sun.

But the most remarkable result, and which is due entirely to the aid of photography, is the discovery of the photographic net-work.

In fact, an attentive examination of these photographs shows that the photosphere is not of uniform constitution all over, but that it is divided into a series of figures more or less distant one from the other, and showing a distinct constitution. The outlines of these figures are generally rounded, but often nearly rectilinear and resembling polygons.

The dimensions of the figures are very variable. They sometimes attain a diameter of one minute or more. Whilst in the intervals between the figures, the grains are distinct and well-defined, although of variable size, in the interior, they are half-effaced, drawn out and confused; generally they have disappeared to give place to streams of matter which replace the granulation. Every thing indicates that in these spaces, the photospheric matter is undergoing violent movements which have confused the granular elements.

Another very important fact, shewn in a very certain manner by the photographs, is, that numerous very dark points show themselves in the parts where the granulation is regular, and indicate that the photospheric layer must have a very slight thickness.

Capt. Waterhouse remarked that some of the small photographs that were now being taken at the Surveyor-General's Office with the photo-heliograph, frequently showed a mottling and figures of various shapes that appeared to correspond with what M. Janssen called the photographic net-work. These photographs were taken by Capt. Abney's beer-albumen process, with alkaline development. Some photographs taken by Colonel Tennant with the same instrument after the Transit of Venus showed these figures very clearly indeed; they were taken by the ordinary wet-collodion process, but were very carefully exposed and developed with pyrogallie acid instead of iron.

These photographs, on which the disc of the sun is only four inches, are too small, and the definition of the instrument is not sufficiently good, to permit of the details being enlarged, so as to make useful observations of the daily state of the photosphere as M. Janssen was doing. For this purpose, a much more powerful optical arrangement was necessary.

The Rev. FR. LAFONT asked to what the distinct difference existing between the various parts of the photograph exhibited was due, some parts being very sharp in outline, others very ill-defined, as if out of focus. It could not be that the tops of the flames in the chromosphere are sufficiently distant from it to produce a difference of focus; might it be that even in the short duration of the exposure, these flames or some of them, displace themselves enough to destroy the sharpness of their outlines? or is it due to some vibration of our own atmosphere? He could hardly believe that the movement of the protuberances is such as to sensibly displace them upon the sensitive plate in the $\frac{1}{3600}$ of a second.

CAPT. WATERHOUSE replied that the want of sharpness was not particularly referred to by M. Janssen in his note, unless it was part of the very phenomenon described by him as occurring in the intervals between the figures of the photographic net-work. He had seen it stated in some of the English journals, that the want of sharpness was not due to any defect of focus or photographing, but was actually the representation of solar phenomena.

Capt. WATERHOUSE said that his attention had been drawn by General Gowan to a photograph of a sculptured group in the Garalmandal Temple at Pathári, near Saugor, in Central India, taken by himself in the year 1862, with reference to a translation by Miss Tweedie of a paper by Prof. Weber, on the Krishna-janmáshṭami or Krishna's birth-festival, published in the 'Indian Antiquary' for December 1877.

The piece of sculpture, of which he exhibited a photograph to the meeting, represented a female figure nearly the size of life lying down on a couch, with the left hand partly supporting her head and a little child lying by her side. Behind the couch there are five smaller female figures, standing apparently in attendance. Some of these hold *chauris* and one holds a sort of bag or purse. The couch is covered with a flowered cloth, and has embroidered cushions. It is supported on carved legs by two couchant lions and a seated human figure. The face and other parts of the principal figure have unfortunately been very much damaged.

From the nimbus round the head of the recumbent female figure, she is evidently a person of sanctity, but whether the sculpture is intended to represent Devakí with the infant Krishna, or Máya with the infant Buddha, it was difficult for him to say, though he had always taken it to be the latter. Capt. J. D. Cunningham, who described the ruins of Pathári in the Society's Journal, No. 189, for April 1848, says, that tradition declares the figure to be that of the Garerun who built the temple, and adds that the shepherd missing his wife one day, was told that her heart's desire had been accomplished; a copious spring had overflowed and formed a lake close to her temple, and that she herself having done with the world, had been metamorphosed into stone, and had become the guardian of the fane of her own erection.

The only point of interest in the sculpture, is the beauty and artistic grace it possesses, and the fact that the child is represented as lying quietly by the side of its mother, with its hands up, while in most of the instances quoted by Prof. Weber in the paper referred to by General Gowan, the infant Krishna is represented as at the breast of his mother.

Capt. Waterhouse said, he was not competent to offer an opinion on the subject himself, but General Gowan had thought it might be of interest

to the Society. An outline sketch would be published in the Proceedings, (see Plate III). Unfortunately the original negative from which the photograph was printed, was in England, and many details are wanting in the only copy that remained, owing to the fact that half the sculpture was in very strong shadow inside the temple.

ADDENDUM;—Since the meeting I have shown the sketch to Dr. Rájendralála Mitra who has kindly favoured me with the following information.

J. W.

“According to the Harivaṁśa and other leading Hindu authorities Kṛishṇa was born when his parents were in prison. The birth took place in a dark rainy night when the warders had fallen asleep, and the father, to save his new-born babe from the doom which awaited it at the hands of Rájá Kaṁśa, the Indian Herod, secretly carried it away, crossed the Yamuná on foot, and finding Yasodá, a cowherdess, asleep by the side of her little daughter born an hour or two before, quietly left his son by her side, and carried the baby to the prison.

If we accept the picture to be a representation of the birth of Kṛishṇa we must assume the scene to be either of the prison cell, or of the dwelling of the cowherdess, and in neither place would the attendants be consistent. I am disposed, therefore, to believe that it is intended for the birth of Buddha. It is true that Buddha is said to have been born in a garden while his mother was leaning against a tree, but she was at the time surrounded by a large retinue of maids, and soon after the birth she was placed on a couch, and this incident is what we see in the picture.

The counterpart of this scene occurs in the Amarávati stone now in the Indian Museum, and in it are to be found the couch, the reclining figure, and the attendants all but exactly the same, the only material difference being that in the one we have a young elephant, the form in which Buddha descended on the earth, and in the other a little child, the form which he assumed immediately after birth.

The semicircular arch you refer to is not a nimbus, but the back-frame of the bedstead. (See my ‘Antiquities of Orissa,’ p. 103, woodcut No. 30.) I may add that lions are rarely shown in Vaishṇavite sculpture, but seldom omitted in Buddhist scenes. They are the emblems of the title *Sīṁha*, which Buddhists are so fond of assigning to the founder of their religion.

It might be said that the temple from which the picture has been brought is a Hindu one, and *à priori* we have a right to expect a Hindu scene in it. But a reference to Capt. J. D. Cunningham’s paper on the Temple of Pathári, will show that the Hindu origin of the fane cannot be satisfactorily established. Capt. C. says “the general impression left upon the mind by an examination of this temple, is that while it is religiously a

Bráhmancial edifice, it is architecturally and sculpturally an adaptation from Buddhism, and serves to show how old material forms are preserved amid mental changes and the revolutions of sentiments," (J. A. S. B. XVII, p. 310.) In short, it is a Buddhist fane, converted to Hindu worship.* A drawing of the Amarávátí stone is to be found in Foucaux's life of Buddha."

MR. H. B. MEDLICOTT exhibited a copy of the new Geological Map of India and said :

The map which I have the honour to lay before the Society, might perhaps be more fittingly handed round for inspection, than hung up in the general view. It is on the tiny scale of 64 miles to an inch, being in fact only an index-map to a Manual on the Geology of India, embodying the results up to date of the labours of the Geological Survey. This work is now well advanced towards publication ; and it will, however imperfectly, supply a demand that has long pressed upon us. The map has been very neatly printed in colours at the office of the Surveyor General of India, and through the kindness of Captain Riddell, R. E., in charge of the Lithographic branch of that office, I have obtained some early impressions ; one has been sent to the Exhibition at Paris and one to Dr. Oldham. This present is the first occasion on which a copy has been seen in India. On the part of my colleagues of the Geological Survey I now present to our colleagues of the Asiatic Society of Bengal this latest produce of our combined labours. In this room, before the busts of Stoliczka and of Dr. Oldham, and in the presence of our President, Mr. William Blanford, we might be tempted to forget the share of this work that is due to unprofessional explorers. To show how erroneous this would be, how broadly the foundations of geology had been laid in India by private hands before an official Survey had any existence, I have also placed before the meeting Mr. Greenough's Geological Map, compiled a quarter of a century ago, by a man who had never set foot in the country, from the observations of early explorers, most of whom were members of this Society. A comparison of the two maps will show a very decided general agreement. It would not be just to push the comparison further. In size and apparent completeness the older map has the advantage, where some considerable blank spaces occur in the recent map, for it was decided that we should put some limit to guess-work. Lines have been put in freely from rapid sketch-surveys, or even from borrowed information ; but we have preferred to leave blank, where the connecting points were too distant and uncertain. As regards details, the minuteness of the map forbids any notice whatever of many points of interest that will be found explained in the Manual, and we have had to

* The country about Pathári is strewed with remains of undoubtedly Buddhist origin. J. W.

club together formations that have long since been distinguished ; as for the great Gondwána rock-system, of which on such a map, we can only show an upper and lower division ; or for the Vindhyan formation, the many sub-divisions of which have all to appear under one colour. But, as I have stated, this map is only an index ; and for many important areas, special maps have already been published.

MR. V. BALL exhibited two stone implements from Parisnáth Hill (District Hazáribágh) and said :—

The two stone implements which I exhibit were received by me from Mr. I. J. Whitty, of Giridi. They are reported to have been found during the clearance of the primeval forest on the northern slopes of Parisnáth Hill, where a tea garden has recently been opened out.

Differing from those which I exhibited from Singhbhúm* and which were interesting as being of the specialised Burmese type, the present specimens (and particularly the larger one) conform to more ordinary types of polished celts, examples of which have been met with in most of the countries of Europe and elsewhere.

As is not unfrequently the case with polished celts, the material of which these are formed is a volcanic (trappean) rock. The large specimen was probably a battle-axe, while the small one, with its carefully ground edge, was no doubt used as a scraper for dressing skins of wild animals.

I hope to hear soon whether any further examples have been obtained from the same locality. In the meantime it is desirable to place on record this new locality.

The following papers were read—

1. *Note on certain peculiarities observed in Hailstones which fell at Khulná, Jessore, on the 31st March, 1878.*—By H. JAMES RAINEX.

On the above date there was an extraordinarily heavy fall of hailstones of rather considerable size, some being as large as a goose's egg. Of course these latter were not single stones, but compound ones, as none of the former are known to attain a larger bulk than that of a pigeon's egg.

As regards the majority of these large stones, their form and structure were rather peculiar. They appeared to be of a discoid form, and their surface was extremely irregular and jagged. From a more or less transparent nucleus about the centre, issued concentric rings of different degrees of opacity, which were very clearly discernible. These peculiarities I have, however, observed before, and I need not describe them more closely, as they are doubtless known to others.

* P. A. S. B. June 1875, p. 118, and June 1876.

What struck me as being especially remarkable about these stones was that when melted they left a sedimentary deposit of a yellowish-brown substance. I found this to be the case at first on placing these stones in a glass of water. Thinking, however, that this powdery substance may have been contained in the water in which I put the stones, or that some earthy matter had adhered to the stones on their falling on the ground, I carefully washed some more stones in clear and pure water, and placed them in a clean glass, and again there was a similar deposit. I then drained off the water, and kept the substance there, with the intention of the next day drying and preserving it, in view of having it eventually analyzed; but, unfortunately, it was thrown away by accident, and has therefore been lost. I have never previously observed this peculiarity in hail-stones; and as it may not be generally known, I have thought it worth while noting down the fact.

It would be interesting to know, if hailstones have been regularly analyzed before, what are their constituent parts,* and whether they vary at different times and places, or not? They appear to have a chemical effect on vegetables, particularly on banana and plantain trees (*Musa sapientum* et *M. paradisiaca*), as they become yellow and seared soon after a fall of hailstones. Even grass on which hailstones have fallen becomes affected in the same way, and contrary to what a shower of rain produces. However, all these changes may be due simply to the low temperature of hailstones. But it cannot in any way account for the sedimentary deposit, which is deserving notice and attention.

The PRESIDENT said, it was unfortunate that the deposit from the hailstones had not been examined microscopically. Atmospheric dust had proved in various cases to contain rather singular constituents, such as diatoms, and recently some blackish powder obtained from melting snow in Sweden had been found to contain iron and a percentage of nickel, and was probably of meteoric origin.

2. *The Application of Photography to the Reproduction of Maps, Plans &c., by the Photo-mechanical and other processes.*—By CAPT. J. WATERHOUSE, B. S. C., Assistant Surveyor General of India.

(Abstract.)

This paper opens with an introduction in which a short account is given of the rise and progress of the system of reproducing maps and plans by photography in the Ordnance Survey Office, Southampton, and in India, and of the objects and advantages to be gained by it. The preparation of the original and the production of the negatives is next considered, and then follows a general review of the various photographic processes employed for

* Rain-water is known to contain carbonate of ammonia. H. J. R.

the reproduction of maps, under the heads of Printing on Sensitive Papers, Photolithography or Photozincography, Photocolotype, Woodbury-type, Photo-engraving, Phototypography, and Miscellaneous processes. The paper concludes with a short note on the uses of photography as an aid in warfare. It will be published in full in Part II of the Journal.

The reading of the paper was illustrated by a series of specimens showing the different stages of the process of photozincography and by some specimens of a process of engraving the author is engaged in working out, and of which a description is given in the paper.

The reading of the following paper was postponed—

3. *On the Antiquities of Bogra.*—By H. BEVERIDGE, ESQ., C.S.

LIBRARY.

The following additions have been made to the Library since the Meeting held in April last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by their respective Societies or Editors.

Berlin. Die Königlische Preussische Akademie der Wissenschaften,—*Monatsberichte*, December, 1877.

Bombay. The Indian Antiquary,—Vol. VIII, Pts. 77 and 78, March and April, 1878.

Part 78. *J. D. Dote.*—The Wives of Muhammad. *J. F. Fleet.*—Sanskrit and old Canarese inscriptions, Nos. 38 and 39. *Capt. W. S. Brooke.*—Notes on the Custom of Mahaprasad in the Sambalpur District, Central Provinces. *Rāvaḥ Vāsudeva Tullu.*—Traditional account of Kālidāsa. *F. M. Mascarenhas.*—Father Thomas Estovas, S. J.

Bordeaux. Société de Géographie commerciale de Bordeaux,—*Bulletin*, Nos. 6, 7, Mars et Avril, 1878.

Boston. The American Academy of Arts and Sciences,—*Proceedings*, Vol. 13, May to November, 1877.

J. P. Cooke, Jr.—Revision of the Atomic Weight of Antimony. *B. Peirce.*—Probabilities of the Three-Ball game of Billiards.

- Calcutta. Mahābhārata,—Vol. III, part 21.
- Cherbourg. Société Nationale des Sciences Naturelles,—Memoires, Tome 15, 1876-77.
- Halle. Das Verein für Erdkunde,—Mittheilungen, 1877.
- Liverpool. Literary and Philosophical Society,—Proceedings, 66th Session 1876-77, No. 31.
- London. The Athenæum,—Nos. 2629—2632.
- . The Statistical Society,—Journal, Vol. XL, part 4, December 1877.
- . The Royal Astronomical Society,—Monthly Notices, Vol. 38, Nos. 3 and 4, January and February 1878.
- . Nature,—Vol. 17, Nos. 437—440.
- . The Geological Society,—Quarterly Journal, Vol. 34, part 1, No. 133.
- J. F. Twiss*.—On possible Displacements of the Earth's Axis of Figure produced by Elevations and Depressions of her Surface.
- Munich. Die K. B. Akademie der Wissenschaften,—Historischen Classe,—Sitzungsberichte, Vol. XLVII, Heft. 2 und 3.
- . Philosophische-Philologischen und Historischen Classe,—Sitzungsberichte, Heft 2.
- . Mathematisch-Physikalischen Classe,—Sitzungsberichte Heft. 1 und 2.
- Palermo. Società degli Spettroscopisti Italiani,—Memorie, Dispensa 2, 3, Febbraro, Marza, 1878.
- Disp. 2. Osservazioni dello Macchie e delle protuberanze solare fatte all' osservatorio del Collegio Romano nel primo semestre, 1877.
- Paris. Journal Asiatique,—Tome 10 et 11, Nos. 1 and 2.
- No. 2. *S. Guyard*.—Note sur la Métrique Arabe.
- Philadelphia. The Academy of Natural Sciences,—Journal, Vol. 8, part 3, 1877.
- Rome. R. Accademia dei Lincei,—Atti, Vol. II, Fasc. 3.
- Roorkee. Professional papers on Indian Engineering,—Vol. 7, No. 28.
- Lieut. C. Hoskyns*.—Description of Mandi Suspension Bridge, 240 feet span.
- Capt. W. Sedgwick*.—Short notes on Mountain Railways for India.
- Capt. H. Wilberforce Clarke*.—The complement of Rolling Stock required for a System of Railways.
- St. Petersburg. Imperial Geographical Society,—Journal, Vols. 3 to 6.
- . Proceedings, March 1872 to December 1873, 6 parts of 1875, and 7 parts of 1876.
- Torino. L' Accademia Reale delle Scienze,—Annuario, anno I, 1877-78.

BOOKS AND PAMPHLETS,

presented by the Authors.

CUNNINGHAM, A. *Corpus Inscriptionum Indicarum*, Vol. I,—Inscriptions of Asoka. Calcutta, 1877.

DOLLINGER, J. V. *Aventin und seine Zeit*. München, 1877.

GUNTHER, A. C. L. G. *Gigantic Land-Tortoises, living and extinct*, in the British Museum. London, 1877.

SMYTH, P. *Edinburgh Astronomical Observations*,—Vol. XIV, 1870-77.

TEMPLE, R. C. *The Lord's Prayer in the South Andaman Language*. Calcutta, 1877.

———. *Notes on the Transliteration of the Burmese Alphabet into Roman Characters, also note of the Vocal and Consonantal Sounds of the Peguan or Talaing Language*. Rangoon, 1876.

MISCELLANEOUS PRESENTATIONS.

Report of the Judicial Administration (Civil) of the Central Provinces for the year 1877. Nágpur, 1878.

CHIEF COMMISSIONER, CENTRAL PROVINCES.

Siberian Expedition, Historical part, Vol. I.; Botanical part, Vol. II.; Geological part, Vol. III, and a Mathematical part.

The Russian and Chinese Turkestan, Vols. 1 and 2, 1869 to 1873.

The Geography of Asia, 1877.

Ethnography, Vols. II and III.

Statistics of Russia in 1869,—Vols. I, III and IV.

Geological description of Thianshan, 1873.

Geological description of Iran, 1874.

Explorations of Mongolia, 1875, Vols. I and II.

Explorations of the Yenessei River in 1865.

The Geological description of Finland, 1876.

Reisen in Süden von Ost Sibirien in den Jahren 1855-59. By Gustave Radde, Band I and II.

THE IMPERIAL RUSSIAN GEOGRAPHICAL SOCIETY.

PERIODICALS PURCHASED.

Berlin. *Journal für die reine und angewandte Mathematik*,—December, 1877.

H. Lorberg.—Ueber das Elektrodynamische Grundgesetz.

Calcutta. *The Indian Medical Gazette*,—Vol. 13, No. 4, April, 1878.

Giessen. *Jahresbericht über die Fortschritte der Chemie*,—Marz, 1878.

Göttingen. Göttingische gelehrte Anzeigen,—Stück. 9—12.

Stück 11. *A. R. Wallace*.—The Geographical Distribution of Animals, with a study of the Relations of Living and Extinct Faunas as elucidating the past Changes of the Earth's Surface. *Benfey*.—Einige Derivate des Indo-germanischen Verbums *abh.* *Dr. Lagarde*.—Erklärung Chaldäischer Wörter.

———. ———, Nachrichten,—Nos. 4 und 5, 1878.

Leipsic. Annalen der Physik und Chemie,—Band II, Stück 3, und Band III, Heft 2.

London. The Academy,—Nos. 306—309, 1878.

———. The Chemical News,—Vol. 37, Nos. 953 to 958, 1878.

———. The Annals and Magazine of Natural History,—Vol. I, No. 3, March 1878.

A. G. Butler.—Descriptions of new species of *Heterocera* from Japan, part II, *Noctuides*. *F. Moore*.—Description of new species of *Lepidoptera* collected by the late Dr. F. Stoliczka, during the Indian Government Mission to Yarkund in 1873.

———. The Entomologist,—Vol. 14, No. 166, March 1878.

———. The Journal of Botany,—Vol. 7, No. 183, March 1878.

———. The Society of Arts,—Journal, Vol. 26, Nos. 1321—1324.

No. 1321. *Dr. Mann*.—The Lightning Rod.

No. 1322. *General McMurdo*.—Settlement and Military Colonisation in India.

No. 1324. *Dr. P. Higgs*.—Electric Lighting.

———. The London, Edinburgh and Dublin Philosophical Magazine,—Vol. 5, No. 30, March 1878.

H. F. Weber.—Electromagnetic and Calorimetric Absolute Measurements; the absolute value of Siemen's Unit of Resistance in Electromagnetic Measure; the relation between the Current-work and the Heat-evolution in Stationary Galvanic Currents; and the absolute value of some constant Hydro-electromotive Forces in Electromagnetic Measure. *W. E. Ayrton*, and *J. Perry*.—Rain-clouds and Atmospheric Electricity. *H. C. Russell*.—On a New Modification of the Bichromate Battery. *W. E. Ayrton* and *J. Perry*.—The Contact Theory of Voltaic Action.

———. The Numismatic Society,—Chronicle and Journal, Part 4, No. 68, 1877.

New Haven, U. S. The American Journal of Science and Arts,—Vol. 15, No. 86, February 1878.

Paris. Annales de Chimie et de Physique,—Tome 13, 5^{me} Série, Février 1878.

M. R. Pictet.—Memoire sur la liquéfaction de l'oxygène, la liquéfaction et la solidification de l'hydrogène, et sur les théories des changements d'état des corps. *A. Rosenstiehl*.—Recherches sur les matières colorantes de la garance.

———. Comptes Rendus,—Tome 86, Nos. 9—12, 1878.

No. 9. *H. Pellet*.—Nouvelle liqueur cuivrée carbonatée pour le dosage du glucose. *L. Bouteux*.—Sur la fermentation lactique.

No. 12. *M. Tacchini*.—Résultats des opérations faites en 1877, au bord du soleil, sur les raies, b et 1474. *K. M. Broun*.—Sur la période de rotation des taches solaires.

Paris. *Journal des Savants*,—March 1878.

———. *Revue Critique*,—Nos. 10-13, March 1878.

———. *Revue des Deux Mondes*,—March 1878.

———. *Revue Scientifique*,—Nos. 37-39, March 1878.

No. 37. *C. Semper*.—Les Articules et les Annélides.

No. 38. *J. Delboeuf et W. Spring*.—Le Daltonisme, recherches expérimentales et théoriques. Enoncé du problème.

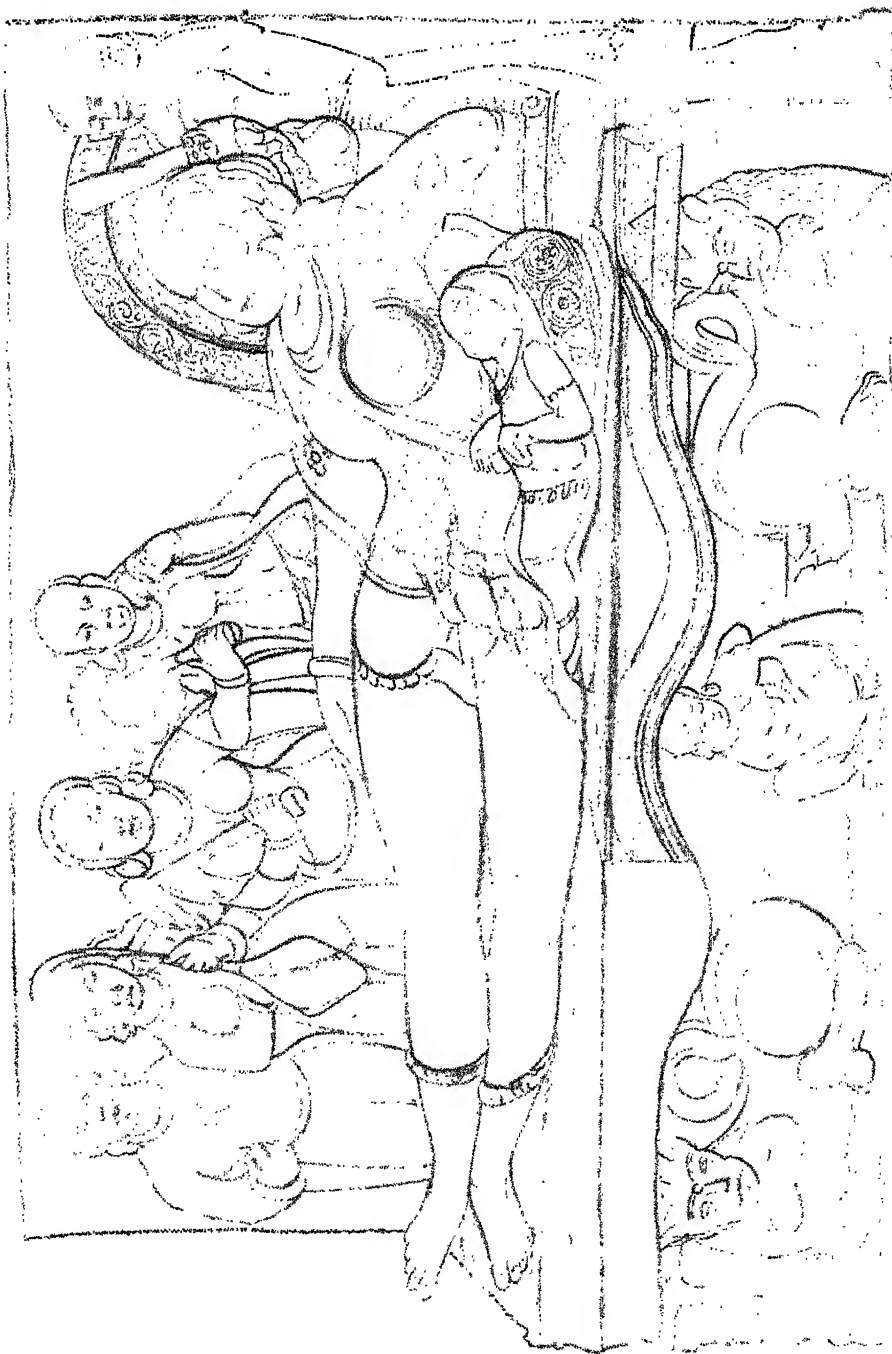
BOOKS PURCHASED.

BOUTLINGK, OTTO. *Sanskrit Chrestomathie*. St. Petersburg, 1877.

THOMSON, SIR C. W. *The Voyage of the "Challenger". The Atlantic*. 2 Vols. 8vo., London, 1877.

STRANGFORD, VISCOUNTESS. *Original Letters and Papers of the late Viscount Strangford upon Philological and kindred Subjects*. 8vo., London, 1878.





Engraved at the Surveyor-General's Office Calcutta.

SCULPTURED FIGURES IN THE GARALMANDAL TEMPLE AT PATHARI, CENTRAL INDIA.

(From a Photograph.)

PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL.

FOR JUNE, 1878.

The Monthly General Meeting of the Asiatic Society was held on Wednesday, the 5th June, at 9½ o'clock P. M.

W. T. BLANFORD, F. R. S., President, in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced.

From M. Garcin de Tassy, "La Langue et la Littérature Hindoustanies," en 1876, 1877.

From the Secretary to Government of India in the Home Department, "Macnamara's History of Asiatic Cholera."

From the Muséum d'Histoire Naturelle de Lyon, the "Archives" of the Museum, Vol. I., for 1876, and Compte Rendu de l'Association des Amis des Sciences Naturelles, for 1876.

From H. F. Blanford, Esq., 'Indian Meteorological Memoirs,' also, 'Report of the Meteorology of India in 1876.'

From the Secretary to Government, N. W. P., a 'Catalogue of Sanskrit MSS. in private Libraries in the N. W. Provinces and Oudh.'

From the Marine Survey Department. 'Chart of West Coast Malay Peninsula, including Kopah Inlet and Jankseylon', also 'Chart of Patni Bay.'

From the Government of India, Home Department, 'Report on Publications issued and registered in the several Provinces of British India, during the year 1876.'

From Dr. Rajendralala Mitra, 'Saddharrua Sutram', in Guzerati, by Narajana binna Chandra.

From Pratap Narain Sing, 'Dharma-bhava Samvaleta Sarira-tatva.'

From the Chief Commissioner, Central Provinces, 'Report of the Judicial Administration (Criminal) of the Central Provinces for 1877.'

Mr. BLECHMANN said—The Society has received since the last meeting the following coins—

(1.) Twelve small silver coins. They all belong to the Kānauij series, and are very common.

(2.) From Lieut.-Col. C. Martin, Agar, W. Málwá, 3 silver coins and 5 copper coins. The silver coins are Hindu. Among the copper coins there is one struck by Mubárák Sháh of Dihlí, and another struck by Ibráhím Sháh of Jaunpúr.

(3.) A copper coin struck by Iltitnish (Altamsh) of Dihlí. The coin is well known.

(4.) From the Foreign Office, through the Hon'ble Sir E. C. Bayley, K. C. S. I., one gold coin and two silver coins. They were received from the Rájá of Sukét, and are said to have been struck from old dies in possession of the Rájá and handed down from his ancestors. The gold coin and the larger silver coin are 'Alá-uddín Muhammad Sháhís. The small silver coin is a Muhammad Sháh of 1155 H. The two first are struck, the last looks as if it had been cast.

(5) From the Trustees of the Phayre Museum, Rangoon, 5 Burmese silver coins.

These were described in the Proceedings for April.

The following gentlemen, duly proposed and seconded at the last Meeting, were ballotted for and elected Ordinary Members—

C. S. Bayley, Esq., C. S.

Lieutenant R. C. Temple.

The following is a candidate for election—

H. L. St. Barbe, Esq., C. S., Assistant Political Agent, Bhamo, proposed by R. B. Shaw, Esq., C. I. E., seconded by W. T. Blanford, Esq.

The SECRETARY announced that Major H. C. Marsh and Capt. E. A. Fraser had intimated their desire to withdraw from the Society.

The PRESIDENT announced that news had been received, since the last meeting of the Society, of the death of Dr. T. Thomson, one of the Honorary members of the Society. He said—

We have to regret the loss of one of the most eminent of Indian naturalists, one who, although prevented by failing health from carrying out the work to which he had devoted his life, the completion of a *Flora Indica* worthy of the country, has nevertheless, by his collections and labours, done much to facilitate the completion of the work by others.

Dr. Thomas Thomson was born in Glasgow in 1817, and was the son of the well-known Professor of Chemistry in the University of his native town. He was a fellow student of Sir Joseph Hooker, his intimate friend

and associate throughout life. After completing his studies at the Glasgow University and taking the degree of Doctor of Medicine, Dr. Thomson entered the medical service of the East India Company in 1839. Very soon after his arrival in India, he was attached to a part of the army in Cabul, and in 1842 he was taken prisoner by the Afghans at Ghazni, whilst serving with the 27th N. I. After the close of the Afghan war and the delivery of the prisoners, Dr. Thomson was engaged for many years in the North West Provinces and the Punjab, and he was attached to the army in both the Sikh wars. In 1847, he was sent by the Governor-General, Lord Hardinge, with Major Cunningham and Captain Henry Strachey on a mission to the Upper Indus valley in Tibet. This journey lasted from August 1847 to October 1848, in the course of which time Dr. Thomson penetrated to the Karakorum Pass, and traversed a large area of country now well-known, admirably mapped, and the yearly resort of tourists and sportsmen, but then difficult of access and scarcely indicated on the existing maps. Large botanical collections and a series of valuable and interesting physical and geological observations were the result of this journey. Almost immediately after returning, Dr. Thomson went to Darjiling and arrived there in time to welcome his friend Dr. Hooker, when the latter with Dr. Campbell were released from captivity in native Sikkim. With Dr. Hooker, Dr. Thomson then visited the Khási Hills, and shortly after returned to England, where he spent some years on furlough.

From 1855 to 1861 Dr. Thomson was superintendent of the Botanical Gardens, Calcutta, and must be still remembered by many of the members of this Society. Besides numerous other undertakings he was busily engaged on the *Flora Indica*, which he commenced in association with Dr. Hooker. He joined this Society in 1855 and was six times elected to the Council, three times as Vice-President. His health, however, had suffered greatly, and when he retired and returned to Europe in 1861, it was for a long time doubtful whether he would live many months. His health ever since has been most precarious.

Dr. Thomson's principal works are his "Western Himalaya and Tibet," an account of his journeys in Cashmere, Ladak &c., and the introduction to the *Flora Indica*, which he wrote conjointly with Dr. Hooker, and which is well-known as one of the most masterly botanical essays ever written. By these his work in India will long be preserved in memory, but to all who had the advantage of knowing him personally, he will be ever better remembered for his kindly nature. Few residents in Calcutta had a wider circle of friends, none were more generally esteemed and beloved than Dr. Thomson.

The SECRETARY reported that Mr. W. E. Bateman's appointment as Assistant Secretary had been confirmed by the Council.

The Council reported that the following rules had been drawn up for the management of the Society's Library.

Rules for the Library, Asiatic Society.

1. The Librarian shall keep a register of books belonging to the Library, showing their registered number, title, name of author, date of receipt, whence obtained, price if purchased, edition, size, number of volumes, number of plates, place and date of publication.

2. All books, pamphlets and periodicals received for the Library, shall immediately on receipt, be entered in the Library Register, and stamped with the Library stamp, the registered number and date of receipt being written in the centre of the stamp. The Librarian shall see that each plate and map in books received for the Library is carefully stamped on the reverse side with the Library stamp. New books received shall be stamped on the cover with the words '*Asiatic Society of Bengal.*'

3. A book shall be kept, in which shall be entered the title of every work lent out, the number of plates, if any, it contains at the time of being lent, the name of the member borrowing the same, and the date on which it is lent. A member applying in person for a work shall sign a receipt for the book and plates it may contain, at the time of borrowing. A member not applying in person shall send a written request for the books he requires, and this request shall be filed in the Library, as a voucher, the Librarian duly noting on it the books actually lent out. The Librarian shall send with each packet of books, a form of receipt, to be signed and returned by the borrower. Should any member prefer to keep a private register of books borrowed from the Library, it shall be the duty of the Librarian to enter in such register the names of all books issued and to initial their receipt when returned.

4. On return of any book to the Library, the Librarian, after satisfying himself that the book is in the same condition as it was when lent out, shall insert opposite to the entry, in the loan register, the date on which the book has been returned, and return to the borrower the receipt, or other voucher given by him, duly cancelled. And if on the return of any book the Librarian shall perceive that it has sustained any damage, since it was taken from the Library, he shall make a note of the particulars and report the same to the Secretary.

5. No member shall remove any book, pamphlet, periodical, or any other article, the property of the Society, from the Library or Reading-rooms without giving the Librarian a receipt for the same.

6. No Book, Pamphlet, Journal, or Periodical &c. shall be lent out before the expiration of one month after its receipt in the Library.

7. Periodicals and unbound Journals in numbers shall be returned after the expiration of one week.

8. A list of the Books, Periodicals and Works of Reference which must not be taken out of the Library without special permission of the Council, shall be placed in a conspicuous position in the Library, and such books shall be marked with a star in the Catalogue.

9. Non-resident members are entitled to take out books, plates, drawings and manuscripts from the Library under the provisions of Rule 14*e* of the Society's Byelaws, *viz.*: on making special application to the Council, and signing an obligation to defray the expense of carriage and to make compensation for any book, plate, manuscript, &c., which may be lost or damaged.

10. No member shall be permitted to have more than 10 sets of books from the Library in his possession at any one time without the special permission of the Secretary.

11. Not more than two MSS. shall be lent out at any one time, to the same person, except with the sanction of the Council.

12. Except with the special sanction of the Council, Members shall not be permitted to keep books, &c., borrowed from the Library for more than three months.

13. All books except in the case stated below shall be returned to the Library before the 1st January in each year. Early in December, the Librarian, having previously ascertained that the books are actually absent from the Library, shall forward to all members who have books belonging to the Society in their possession, a letter requesting that such books be returned before the end of the month. Non-resident members who, on the 1st January, have had books &c., from the Library for less than 3 months may send a detailed list of such books instead of returning them.

The Librarian shall report to the Council each year at their meeting in January, the names of all books not returned, and of the members by whom they were borrowed, and the Council may, if they think proper, suspend the names of such members in the Reading-room.

14. If application be made to the Librarian for a book already taken out from the Library, he shall issue a notice to the borrower, requiring him to return it, free of expense, within one week from the receipt of such notice, if a resident member, and within 15 days, if a non-resident member.

15. If any book borrowed from the Library be lost or damaged, the borrower shall be held responsible for such loss or damage, and if the book belong to a set, he shall be held liable to make good the set to the satisfaction of the Council, or pay its value.

16. No book &c. shall be issued from the Library to any member while he retains any property of the Society in contravention of the above rules.

17. A book shall be kept in the Library in which members may write the names of any books, &c., they may recommend to be purchased for the Library.

18. No person who is not a member of the Society shall be permitted to take away any book from the Library without special authority from the Council, or to have access to the Library without permission of the President or of one of the Secretaries.

19. In no case shall any member be allowed to take out of India (as defined in rule 32) any Book, Manuscript, Pamphlet, Periodical &c. belonging to the Society.

20. The Librarian shall have under his charge all Manuscripts, Rubbings of inscriptions, Photographs, Drawings, Maps, and Copper-plate grants belonging to the Society, and shall keep a separate register of each.

21. The Librarian shall be held personally responsible for the safety of the Books, Manuscripts, Photographs, and other articles belonging to the Society's Library under his charge, and that these rules are properly carried out, as far as lies in his power.

The SECRETARY announced that a letter had been received from the Schwann Memorial Committee, Liège, Belgium, asking for the co-operation of the Asiatic Society at an anniversary festival to be held in honour of Schwann, the discoverer of the analogy of the structure of animals and plants.

The SECRETARY announced that a letter had been received from the Geographical Society of Lyons, giving an account of a large Geographical Globe, constructed in 1701, by Henri Marchand, and asking the assistance of the Asiatic Society in forwarding geographical information, to enable the Society to publish an account of the early geographical researches during the 10th century.

Mr. W. T. BLANFORD exhibited two skins of adult wild swans, shot by Mr. H. E. Watson at Baháwalpur, near Sehwan, in Sind, on the 12th February last, and clearly belonging to the mute swan, *Cygnus olor*, the same as the tame swan of England. Mr. Blanford pointed out that this was the first time that the occurrence of this bird had been recorded so far to the southward or that the adult had been shot in India. Mr. Watson saw wild swans on two occasions during the past cold season, once on the Manchhar lake near Sehwan, in January, and the second time at Baháwalpur, in the Sehwan district, on February 12th, on this latter occasion he succeeded in shooting three.

The only other cases in which swans had been previously procured in India were noticed by Mr. Brooks in the Proceedings of the Society for April, 1872, p. 63. . So far as Mr. Blanford was aware, no subsequent notice of the occurrence of swans in India had appeared. The only previously recorded instance in which *C. olor* had been obtained was in the extreme

north-west of the Punjab, where two immature specimens were obtained in 1871 by Captain Unwin and described by Mr. Hume (*Ibis*, 1871, p. 412.).

The occurrence of these birds in Sind must be very unusual, for they were, Mr. Watson says, quite unknown to the fishermen, all of whom are fowlers and know every water-bird in the country well.

Mr. Blanford also called attention to a third skin of a wild swan exhibited by Dr. J. Anderson, who was unable to attend the meeting. This bird was shot at Attock, in the upper Punjab, on the 17th January last by Lieutenant G. P. Hill, of the Rifle Brigade, and presented to the Indian Museum. It proved also to be a specimen of *O. olor*, but rather younger than the two specimens from Sind, the tubercle on the bill not being developed.

The following papers were read—

- 1.—*On the Antiquities of (Bagurá) Bogra.*—By H. BEVERIDGE, C. S. Rangpur.

This paper will appear in No. I of the Journal, Part I, for this year.

- 2.—*Note on the absence of a Horn in the Female of the Sundarban Rhinoceros and Javanese Rhinoceros (Rh. Javanicus, Cuv.)*—By H. J. RAINES.

Having read with great attention Mr. O. L. Fraser's graphic "Note on a partially ossified Nasal Septum in *Rhinoceros Sondaicus*," which appeared, accompanied with a plate clearly illustrating it, in *J. A. S. B.*, 1875, pp. 10-12, I found a fact mentioned, which, as far as I am aware, has never been before noticed, namely, the absence of a horn in the female of the Sundarban Rhinoceros. As regards this point, Mr. Fraser stated: " * * what is very peculiar, the female has no horn whatsoever." This induced me to endeavour to ascertain if the female of the Javanese Rhinoceros, which is considered to be of identical species with the Sundarban animal, possesses a horn or not, for if the former did not, it would clearly be a distinct and new species. I accordingly applied to Dr. Günther, keeper of the British Museum, Zoological Department, for information on the subject, and that gentleman was good enough to forward to me answers to more than a score of questions on that and other points. But, as his answers were based on an examination of a single specimen of "a skeleton obtained from Java of a Dutch dealer,"* the sex of which was "unknown," the information was of course inadequate, as Dr. Günther himself remarked: "I am afraid the data thus obtained will not be sufficient to settle the distinctness of the Java and Sundarban

* The only one of the kind, I believe, in the British Museum, at least then.
H. J. R.

one-horned Rhinoceros, which, however, I consider very probable." The animal was described, in answer to one of the questions, as "not quite full grown, the last molar not quite grown to the head of the stem." The length of horn was given as $8\frac{1}{2}$ inches, and the circumference at the base 19 inches. In reply to the question, whether the female had a horn or not, the answer was "not known."

As the above answers did not at all dispose of the question raised, I addressed a letter to Meinherr W. P. Groenveldt, Secretary of the Batavian Society of Arts and Sciences, in the early part of the current year, asking to be informed positively, whether the single-horned Rhinoceros of Java (*Rh. Sondaicus*, Müller,) is provided with a horn or not. I also asked, whether that species possessed a partially ossified *septum narium* or not. His letter,* in reply to mine, I have just been favoured with, and as it is concise and directly to the point, I may as well quote it at length. It runs as follows :

"Before replying to the question contained in your letter of January 4th, I have consulted two of my friends, Dr. Ploem and Dr. de Gavere, both experienced zoologists, and as their opinion quite agrees with my own experience, I think the following information may be regarded as *positive*.

"The female of the *Rhinoceros Sondaicus* (we prefer calling it *Rh. Javanicus*, following the older name by Cuvier) is not provided with a horn, but has only a slight rugged protuberance on the skull bone, which is just visible on the skin too.† The natives say that the female also has a horn sometimes, but I suspect this to be nothing more than a greater development of the protuberance in aged specimens.

"The *septum narium* is always partially ossified, but never to such a degree as in the fossil remains of the *Rh. tichorinus*. In very aged specimens the nasal septum may be quite ossified, but I have never seen any, and, as far as I know, the ossification agrees with that of the other known species."

There can now be hardly any doubt that, the one-horned Javanese Rhinoceros and Sundarban Rhinoceros are of identical species, as asserted by Blyth and other well known zoologists.

The PRESIDENT said—that the question of the specific distinctions between the different kinds of Rhinoceros had lately been investigated by Professor Flower, in the Proceedings of the Zoological Society for 1876,

* Bearing date the 20th April, 1878. H. J. R.

† In a photograph of a young female Sundarban Rhinoceros now before me, I observe a prominence there, also. H. J. R.

p. 443, and all the known species except the white African Rhinoceros, *R. sinus*, had been beautifully figured by Mr. Wolf to illustrate a paper by Dr. Selater in the Transactions of the Zoological Society (Vol. IX, Part 11.) The general consensus of opinion, founded on various characters, was that the Javanese and Sandarban Rhinoceroses were identical. In Plate XCVI of the Transactions just mentioned, the *Rhinoceros* from Java is represented and the figure can be compared with the Sundarban animal.

3.—*Notes on Reptilia from the Himalayas and Assam.*—By W. T. BLANFORD, F. R. S.

(Abstract.)

The following species are described as new :

Draco major; the largest form of the genus known, allied to *D. dussumieri* and *D. quinquefasciatus*; nostrils directed upwards, tympanum naked, a small tubercle behind the orbit, no nuchal crest, the hind-leg falls short of the armpit when laid forward; gular appendage long, covered with large smooth scales, each fully twice as long and broad as an abdominal scale. A row of enlarged scales, at a distance from each other, along each side. A crest of large pointed scales along the hinder part of the thigh and each side of the tail near the base. The largest specimen measures 14 inches, of which the tail is 9.25. Head and body, in 3 males, 4.75 in. long. The only female procured is smaller and has a very short gular appendage. From near Tavoy: four specimens.

Bronchocela burmana: lateral scales in 23 to 25 longitudinal rows, dorsal row rather larger, scales of abdomen much larger, in about 12 rows, all sharply keeled. Nuchal crest small, no enlarged shields behind the supercilium. Colour green throughout. From near Tavoy: one specimen.

Ulupe davisoni, new genus and species of *Lycodontidæ*. Head short, depressed, distinct from neck; body slender, compressed. Pupil vertical, nostril in a single shield, loreal and single præocular united, two postoculars, supralabials 7, third and fourth entering the orbit. Scales of body smooth, in 13 rows. Ventrals 265, strongly angulate at the side, anal undivided, subcaudals in 108 pairs. Maxillary teeth few in number. Colour above black with white cross-bands, lower parts white, mottled with dusky behind. Foot of Nawlabu hill, west of Tavoy: one specimen.

Ophites gammiei: scales in 19 rows, the dorsal rows keeled, lateral smooth. Body slender, compressed; head broader, flat. Ventrals 214, bluntly angulate at the sides, anal entire, subcaudals 101 pairs. Anterior frontals small, each about one-third of a post-frontal, and as long as broad, post-frontals much broader in the middle than they are in front and behind, and

bent over the side of the head above the small loreal. Upper labials 8, third, fourth and fifth entering the orbit, 1 præ-, 2 post-oculars. Body surrounded by alternating light and dark rings with irregular margins. From the Cinchona plantations, British Sikkim: one specimen.

4.—*The Bangash Nawábs of Farrukhábád. A Chronicle (1713-1857),*
Part I.—By WILLIAM IRVINE, C. S.
 (Abstract.)

The founder of the family, Nawáb Muhammad Khán Ghazanfar-Jang was born, between 1665 and 1670, at Mau-Rashídábád, near Káimganj, twenty-one miles west of Farrukhábád. He was the second son of Malik Zain Khán, a Kághzai Kaoláni Pathán of the Bangash tribe, who settled in that town in the reign of Aurangzib-Alamgír (1658-1707). His early years were passed as a commander of free-lances in Bundelkhand. In 1713, he joined the standard of Farrukhsiyar and fought in the van at the battle of Samogar. After the victory he was made a Commander of Four Thousand and received *jágírs* in Bundelkhand. In 1714, he founded Káimganj, Muhammadábád and Farrukhábád, having obtained a grant of the parganahs of Shamshábád and Bhojpúr. After the murder of Husain 'Alí Khán Bárha, again espousing the winning side, he fought under Muhammad Sháh in the battle of November 1720, where 'Abdullah Khán Kutb-ul-Mulk was defeated and captured, Muhammad Khán was advanced to be a *Panj-Hazári* and subsequently to the rank of *Haft-Hazári*. He was governor of Alláhábád (1722-1730), of Málwá (1731), and again of Alláhábád (1735). He died at an advanced age on the 9th December 1743, and was buried in the Hayát Bágh, outside the Mau gate of Farrukhábád. He had twenty-two sons.

The eldest son, Káim Khán, succeeded and ruled for five years. At the instigation of Safdar-Jang, wazir of Ahmad Sháh, he invaded Rohilkhand, and on the 23rd November, 1748, he was killed, with most of his chief men, in the battle fought at Dauri-Rasúlpur, a few miles south-east of Badáon. Imám Khán, a younger brother, succeeded, but six months afterwards he was made a prisoner by the wazir and sent to Alláhábád, where his life with that of four brothers was taken. The territory was resumed by the wazir and made over to his deputy, Rájá Naval Ráe, Káyath. Not long afterwards the Patháns rose and on the 1st August 1750, headed by Ahmad Khán, second son of Nawáb Muhammad Khán, they defeated Naval Ráe on the banks of the Kálí river near Khudáganj, seventeen miles south-east of Farrukhábád. Naval Ráe was shot in the head. Meanwhile the wazir in person was approaching from Dilhí. The decisive battle was fought on the 13th September, 1750, at a place called Rám-

Chatauni, half way between Paṭiáli and Saháwar, in the Etá district. The wazír received a graze from a spent shot, and his troops believing him to be dead gave way. A signal victory was obtained by the Patháns. Instead, however, of advancing on Dilhí, Ahmad Khan turned eastwards and occupied the whole of the Audh and Alláhábád territories. The fort of Alláhábád alone resisted, and after having wasted several months in an unsuccessful siege, the nawáb was recalled in haste to defend his inherited domains. The wazír with the aid of the Mahrattas had already expelled his troops from the parganahs to the west of Farrukhábád. In April 1751, Nawáb Ahmad Khan was invested in the fort of Fathgarh, and a month and some days had elapsed, when Sa'dullah Khán Rohela, who was marching to his relief, having been defeated on the other side of the river, Ahmad Khán made his escape with some difficulty to Anwala, the Rohela headquarters. After the rains the wazir and the Mahrattas crossed the Ganges. The Bangash and Rohela forces then retreated to Chilkya at the foot of the hills, where they entrenched themselves. After some months of desultory fighting a peace was made. To meet the pay due to the Mahrattas by Safdar Jang, about one half of the Bangash territory was made over to them. The country left to the nawab, known as the sixteen and a half maháls, consisted of nearly the whole of the Etá and Farrukhábád districts, and about half of the present district of Mainpurí. In the great battle of Páñipat in January 1761, Ahmad Khán fought with destruction on the right wing of Ahmad Sháh Duráni's army. Ahmad Khán died on the 12th July, 1771, the day that Sháh 'Alam entered Farrukhábád on his way from Allahábád to Dilhí.

Ahmad Khan's eldest surviving son, Diler Himmat Khan, succeeded under the title of Muzaffar Jang. In 1774, this nawáb became tributary to Shujá'-ud-daula, nawáb-wazir of Audh, paying to him four and a half lakhs of rupees annually. About the year 1786 this tribute was made over to the English in part payment of the subsidiary force stationed at Fathgarh. On the 23rd October, 1796, Muzaffar Jang died suddenly from poison, supposed to have been administered at the instigation of his eldest son Rustam 'Alí Khán. This eldest son was deported to Lakhnau by Ásaf-ud-daula, and the second son Imdád Husain Khan, Násir Jang, succeeded. In this nawáb's time was negociated the treaty of the 24th June, 1802, (Aitchison VII, 36,) making over the Farrukhábád territory in return for an annual payment. Násir Jang died of hard drinking on the 1st February, 1813. He was succeeded by his minor son Khádim Husain Khan, Shaukat Jang. He died at Dilhí on the 24th July, 1823, of small-pox. Tajammul Husain Khan, his son, succeeded. On his death in November 1846, he was followed by his cousin Tafazzul Husain Khan. This nawáb joined the rebels in the Mutiny, but his life having been promised at his surrender,

he was not executed. He now lives at Mecca, and gains a living, it is said, by copying *Kūrāns* and painting small pictures of the holy places. His son Asghar Husain Khán, now about twenty-two years of age, lives in Farrukhábád.

Contents of Part I. NAWAB MUHAMMAD KHAN, origin of the family. Muhammad Khan's early years. He enters the Imperial service. He founds Káimganj, Muhammadábád and Farrukhábád. The city of Farrukhábád. Events from 1719-1726. Invasions of Bundelkhand. Campaign in Málwá. Campaigns against the Mahrattas (1732-1736). Re-appointed to Allahabad. Nadir Shah's invasion. Muhammad Khán intercedes for Alí Muhammad Khan Rohela. Affair about Rae Náráyan Dás. Story of a mango. Muhammad Khan's death and his character. His Chelas. His territory. His wife and children. Note A. Ráshid Khan and the Khán-zádahs. Note B. The Bamtēlas. NAWAB KAIM KHAN. Account of his reign, his wives &c., &c. Rohilkhand affairs. Accession of Ahmad Shah. Káim Khan's defeat and death. NAWAB IMAM KHAN. The confiscation of the territory. NAWAB AHMAD KHAN. His accession. Battle of Khudáganj and death of Naval Ráe. Advance of the Wazír. Execution of the five princes. Execution of the five Chelas. Defeat of the wazir. Siege of Allahábád fort. Siege of Fathgarh and flight of the Nawáb. The campaign in Rohilkhand. Attack by the Atíthhs of Rájah Indar Gir. Visit of the Almorah Rájah. Negotiations through 'Alí Kulí Khán. Intrigues in the Pathán camp by Mahbúb 'Álam. Renewal of negotiations, followed by peace. Ahmad Khán marries again. First visit of Ghází-ud-dín Khán 'Imád-ul-mulk. Ahmad Khán at the battle of Pānipat. Visitors to Farrukhábád. Shujá'-ud-daula and Sháh 'Álam attempt to attack Farrukhábád. Shujá'-ud-daula takes refuge at Farrukhábád. Muzaffar Jang's marriage. Mahratta affairs 1752-1771. Ahmad Khan's blindness and death. Anecdotes showing his habits and character. His wives. His children. His Chelas. I. Chronological table of Nawábs of Farrukhábád. II. Tables of Ahmad Khán's descendants. III. Table of Sa'dulla Khán, Burhan-ul-Mulk's family. IV. Table of Safdar Jang's family.

5.—*Notes on the Earthquake in the Punjab of 2nd March, 1878.*—By A. B. WYNNE, F. G. S.

(Abstract.)

This paper comprises such information regarding the above earthquake as the author was able to collect from the different stations in the northern part of the Punjab which were affected by it.

It will be published in the Journal, Part II.

The PRESIDENT said that it was extremely desirable that careful records should be obtained of the various earthquake shocks so frequent in India.

He would venture to point out how much more prevalent such shocks were in the neighbourhood of the great river plains than elsewhere. Assam, the Himalayas, Sind and Cutch were far more subject to earthquakes than the peninsula, that is to say, the countries which had at a geologically recent date undergone great disturbance were far more affected than those which had remained comparatively undisturbed. He suggested that the elevation of the Himalayas, of the Sulemán and other ranges west of the Indus, and of the mountains of Assam might perhaps still be in progress from compression, whilst the disturbing cause might be the constantly increasing pressure of the great areas of deposition in the deltas of the Ganges, Brahmaputra and Indus, and the subsidence due to such pressure. A similar effect was being produced in the valley of the Irrawady, another earthquake centre.

LIBRARY.

The following additions have been made to the Library since the Meeting held in May last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS, *presented by their respective Societies or Editors.*

Berlin. Die Königliche Preussische Akademie der Wissenschaften,—Monatsbericht, January, 1878.

Bombay. The Bombay Branch of the Royal Asiatic Society,—Journal, No. 35, Vol. 13.

Pandit Bhagavánlál Indrají.—Copper-plate of the Siláhára Dynasty. *E. Rehatsek.*—Christianity in the Persian Dominions, from its beginning till the fall of the Sasanian Dynasty. *J. Gerson da Cunha.*—The English and their Monuments at Goa. *J. C. Lisboa.*—Some plants undescribed in the "Bombay Flora" by Dr. Gibson and Mr. Dalzell. *E. Rehatsek.*—Christianity among the Mongols till their expulsion from China in 1368: comprising the Eastern Grand Kháns or Emperors, with the Western or Persian Kháns. *Surgeon Major O. Codrington.*—Coins of Andhrabhṛitya Kings of Southern India. Prepared from a paper by *Pandit Bhagavánlál Indrají.* *E. Rehatsek.*—Brief Notice of two Arabic Manuscripts on the History of Yemen. With notes from Portuguese sources, by *G. da Cunha.*

———. The Indian Antiquary,—Vol. 7, Parts 79, 80, May 1878.

W. F. Sinclair.—Hindu and Jaina remains in Bijápur and the neighbourhood.

M. J. Walhouse.—Archæological Notes, No. 19. *R. B. Swinton.*—Râjmaháli words. *Dr. C. R. Stulpnagel.*—Polyandry in the Himálayas.

Bordeaux. Société de Géographie commerciale,—Bulletin, No. 8, Avril.

Calcutta. Geological Survey of India,—Records, Vol. II, Pt. 1.

T. W. H. Hughes.—Notes on the Geology of the Upper Godávari Basin, between the River Wardha and the Godávari, near the Civil Station of Sironcha.

R. Lydekker.—Notes on the Geology of Kashmir, Kishtwar, and Pangi. Notices of Siwalik Mammals. *W. T. Blanford*.—The Palæontological relations of the Gondwana System: a reply to Dr. Feismantel. *A. B. Wynne*.—On Remarks, &c., by Mr. Theobald upon Erratics in the Punjab.

———. The Calcutta Journal of Medicine,—Vol. 8, Nos. 11, 12.

———. Mahábhārata,—No. 22.

London. Institution of Mechanical Engineers,—Proceedings, January 1878.

R. D. Sanders.—On continuous Brakes for Railway Trains.

———. The Athenæum,—Nos. 2635-37, 1878.

———. The Geographical Magazine,—Vol. 5, No. 4, April 1878.

———. The Anthropological Institute,—Journal, Vol. 7, Nos. 2, 3. November 1877, February 1878.

———. Nature,—Vols. 17, 18, Nos. 443, 444 and 445.

———. The Royal Society,—Proceedings, Vol. 27, No. 185.

A. Pedler.—On Cobra Poison. *J. P. Joule*.—New Determination of the Mechanical Equivalent of Heat.

———. The Zoological Society,—Proceedings, Parts 3 and 4, 1877.

———. Transactions,—Vol. 10, Parts 3, 4, 5.

Part 3. *A. H. Garra*.—Notes on the Manatee (*Manatus Americanus*) recently living in the Society's Gardens.

Part 4. *W. R. Parker*.—On the Structure and Development of the Skull in Sharks and Skates.

Part 5. *P. M. Duncan*.—A Description of the *Madreporaria* dredged up during the Expedition of H. M. S. "Porcupine" in 1869 and 1870.

Palermo. La Società degli Spettroscopisti Italiani,—Memorie, Dispensa 4^a, Aprile 1878.

P. Tacchini.—Sul minimum delle macchie solari, confronto fra le osservazioni del primo trimestre 1878 e quelle del 1877. Osservazioni spettroscopiche solari fatte a Palermo nel primo trimestre del 1878.

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presented by the Authors.

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ADHARA LALA SENA. *Lalita Sundari*. *Nalini*. *Menakagiti*, a Poem.

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MISCELLANEOUS PRESENTATIONS.

N'ARAYANA HEMA CHANDRA. *Saddharma Sutram 1877*, Bombay.

DR. RAJENDRALA'LA MITRA.

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DEPT. OF REVENUE, AGRICULTURE AND COMMERCE.

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CHIEF COMMISSIONER, CENTRAL PROVINCES.

Report on the Administration of the Meteorological Department, 1876-77.

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A. G. Butler.—Descriptions of New Species of *Heterocera* from Japan. Part 2, *Noctuities*. *J. S. Baly.*—Description of a New Genus and of New Species of *Halticinae*. *W. C. Hewitson.*—Description of twenty new species of *Hesperiidae* from his own Collection. *Dr. F. Brüggenmann.*—Note on *Artamus monachus*.

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 • Action of Perchloride of Iron and concentrated Sulphuric Acid on some of the Bases in Opium.

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No. 1325. *Col. J. T. Smith.*—The Depreciation of the value of Silver, with reference to exchange between India and England. *Major Bateman-Champain.*—The Telegraph Routes between England and India.

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W. S. Jevons.—On the movement of Microscopic Particles suspended in Liquids. *R. Briggs.*—On the Relation of moisture in air to Health and Comfort. *R. Pictet.*—Liquefaction of Oxygen. The Phonograph.

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J. Boussingault.—Étude sur les fonctions physiques des feuilles : transpiration, absorption de la vapeur aqueuse, de l'eau des matières salines. *H. Pellet*.—Action de diverses substances sur le sucre cristallisable.

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No. 13. *M. Faye*.—Sur le mouvement des tempêtes.

No. 15. *M. Faye*.—Taches du Soleil et Magnétisme.

No. 16. *M. P. Tacchini*.—Observations des taches et des protubérances solaires, pendant le 1er trimestre de 1878.

No. 17. *MM. Pasteur, Joubert et Chamberland*.—La théorie des germes et ses applications à la Médecine et à la Chirurgie.

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B. Saint-Hilaire.—Le Zen-Avesta de Zoroastre.

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No. 14. *H. Chavée*.—Idéologie lexicologique des langues indo-européennes.

No. 18. *A. P. Soupé*.—Études sur la littérature sanscrite.

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No. 42. *P. Bert*.—Influence de la lumière sur les êtres vivants. *M. Berthelot*.—Thermochimie et mécanique chimique.

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CLEGHORN, H. General Index to Dr. Wight's *Icones Plantarum Indiae Orientalis*. Madras, 1856

CORBETT, A. F., Lieut.-Col. *The Climate and Resources of Upper India*. London, 1874.

GOLDZIEHER, I. *Mythology among the Hebrews, and its Historical development*. London, 1877.

GRAY, J. H. *China, a History of the Laws, Manners, and Customs of the People*. 2 Vols. London, 1878.

LITTRÉ, E. *Dictionnaire de la Langue Française*. Supplément Paris, 1878.

MALLESON, G. B., Colonel. *Final French Struggles in India, and on the Indian Seas*. London, 1878.

SKREEFSRUD, L. O. Rev. *A Grammar of the Santhal Language*. Benares, 1873.

PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL.
FOR JULY, 1878.

The Monthly General Meeting of the Asiatic Society was held on Wednesday the 3rd July, 1878, at 9½ o'clock P. M.

W. T. BLANFORD, F. R. S., President, in the Chair.

The Minutes of the last Meeting were read and confirmed.

The following presentations were announced—

1. From Adharlal Sen, a copy of the *Lalita Sundari*, *Monakagiti*, a Poem, and *Natini*.

2. From the Chief Commissioner, Central Provinces, Report of the Police Administration of the Central Provinces for the year 1877.

Report on Government Charitable Dispensaries, in the Central Provinces, for 1877.

Report of the Lunatic Asylum and of the Gaols in the Central Provinces, for 1877.

3. From the Quarter Master General, *Routes in Asia*, 5 Vols.

4. From the Madras Government, An Annual report of the Civil Dispensaries, in the Madras Presidency for the year 1877.

5. From the Marine Survey Department, Charts of the Narakel Anchorage and approaches to Jafnapatan.

6. From the Bengal Government, Annual Report of the Police Administration of the Town of Calcutta and its Suburbs.

7. From the Government of India, Home Department, A Catalogue of Arabic Manuscripts in the Library of the India Office.

The following Gentleman duly proposed and seconded at the last Meeting was elected an Ordinary Member.

H. L. St. Barbe, Esq., C. S.

The following are candidates for ballot at the next meeting.

T. DeSacy Johnstone, Esq., B. C. S., proposed by Capt. J. Waterhouse, seconded by H. Blochmann, Esq.

Major T. H. Lewin, Deputy Commissioner, Darjeeling, (for re-election), proposed by W. T. Blanford, Esq., seconded by A. W. Croft, Esq.

Dr. E. Laurie, Medical College, Calcutta, proposed by Dr. Partridge, seconded by Capt. Waterhouse.

The Council reported that Mr. Medlicott had undertaken the duties of General Secretary during the absence of Capt. J. Waterhouse on leave.

The Rev. Fr. Lafont exhibited two microphones and explained their construction and working. He said—The Microphone of Prof. Hughes consists essentially in the introduction of an imperfect contact at a point of an electric circuit comprising a telephone. Two pieces of carbon loosely connected by a third piece and supported by a thin board on a sounding-box, form a very delicate transmitter of sounds. The vibrations communicated to the loose pieces of carbon, produce variations in the points of contact and this causes similar variations in the current passing through the telephone thus reproducing in the latter instrument the original sonorous vibrations.

In its present crude state the microphone may be extremely useful in any case where a monotonous or periodical sound is to be sent to a distant station. It might for instance be used for placing any station in direct communication with the chronometer of an Observatory and thus facilitate astronomical operations in the determination of Longitudes.

The microphone when reduced in sensitiveness and rendered more manageable by the addition of two very delicate springs to the loose piece of carbon, could be employed for articulated speech, and produced these sounds very much louder than the Telephone. A person standing some 15 or 20 feet from the microphone and speaking towards it, was distinctly heard in the distant Telephone.

Two different kinds of Microphones were then circulated, and afterwards used to convey the ticking of a watch from one of the rooms to another, distant about 40 yards: one of the instruments had a vertical piece of graphite between two carbon blocks; the other consisted of five small pieces of carbon enclosed in a glass tube and mounted on a sounding-box.

The PRESIDENT said that considering the very short period—only a month—that had elapsed since news of the discovery of the microphone had been received from Europe, the meeting was greatly indebted to Father Lafont for an opportunity of examining this remarkable addition to the series of interesting inventions of which the telephone had been the origin.

The following papers were read—

1. *Notes on a Map of the Mughal Empire.*—By H. G. KEENE, C. S., *Agra.*

The accompanying map* is an attempt to show the arrangement of the various Provinces at some central period, say in the early years of Aurangzib;

* The Council do not think it necessary to reproduce the map. *En.*

after all claims to Kandahár and other northern Provinces had been abandoned, and before the Mahratta confederacy had begun to dispute the Mughal supremacy in the south.

Originally, the Empire as described by Abul Fazl in the 40th year of Akbar consisted of twelve subahs besides later-acquired territory which had not at that time been completely organised with the Imperial Cosmos. In later times, the number of these provinces averaged twenty; for, though there are as many as twenty-seven named in some lists, yet they are either produced by splitting lesser provinces or such as were never held all at one period. The land revenue of the twelve *subahs* is stated by Abul Fazl to have aggregated over nine *krors* of Rupees, a sum which in his detailed lists, with the addition of land and sea-customs and income derived from the inorganised provinces of Sindh and Kashmir, he brings to nearly one *kror* more, or say Rs. 99,613,850. A large but unascertained contribution must also be allowed in the services of the *Bumi* (or "*landwehr*") a large irregular militia of horse, foot, and artillery assessed on the various districts independent of the levies maintained by the Mansabdars and the standing army of the Crown.

It would be indecorous to omit the mention of Mr. E. Thomas, F. R. S. in this connection. That distinguished scholar and numismatist has on various occasions (see his *Prinsep*, Vol. II., his *Chronicles*, and *Revenue Resources*) made efforts to bring the figures of the *Ain* into harmony with estimates elsewhere derived. Finding, for example, that an accountant of Akbar's estimated the total revenue at 640,000,000 *tankas*, Mr. Thomas concludes that this equals £32,000,000 sterling, and hence concludes that Abul Fazl has meant to state double the figures that he has stated, and that this must be doubled again by the addition of what in modern Anglo-Indian parlance is called "Separate Revenue." Four times ten however would not yield thirty-two, but forty—even if the exchange value of ten Rupees to one pound English could be proved to have obtained in Akbar's time, of which there is no proof. Moreover, the proposed emendation of the text (from "three" to "six" *arbs* of *dáms*) does violence to all known versions of the *Ain Akbari*.

The following is a strict translation of the important words, taken from Professor Blochmann, Calcutta, text III, 386;—

"In the 40th year of his reign the Emperor Akbar had a decennial settlement of his dominions at the annual revenue of three *arbs*, sixty-two *krors*, ninety-seven lakhs, fifty-five thousand, one hundred and forty-six *dáms*, or Rs. 90,749,881-2-5."

This tallies with other texts including the Lakhnau lithograph of Munshi Nawal Kishor, which is highly esteemed by native scholars.

Four other provinces are mentioned by Abul Fazl; namely, those of

Multán and Tattah, forming the modern Commissionership of Sindh and part of the Punjab; and Kashmir with Kábul, a mountainous region, assessed chiefly in kind, and chiefly valued for purposes of sport and luxury.

The following specification of each province is abstracted from the same work; I have not thought it necessary to add the figures from the separate *Taksim Jamas* or detailed rent-rolls which, though not prepared apparently quite at the same moment as the descriptive parts, do not exceed the estimates there given very seriously, seeing that they contain some further items of separate revenue. Each province was in area about equal to an average European kingdom. Of these provinces the most eastern was BENGAL forming with Orissa a vast and fertile tract assessed at about one and a half *krors* of Rupees. The capital was at Gaur or Lakhnauti. BAHAR (often united with Bengal under the general title of "the Eastern Subahs") was the very finest part of the Gangetic valley, both in climate and natural advantages. It had both on the north and south fine mountain ranges for limits; abundant streams watered the soil. The name of the capital is not given in the *Ain*, it was probably at Patna. The land revenue was over forty-three lakhs.

ALLAHABAD and AUDH, often held by the same *Subahdár*, resembled Bahar in size, character and conformation. The capital of the one was at Prayág, and derived from Akbar the name it communicated to the entire district. The capital of the other—Audh or Ajudhia—was near the site of the modern Faizábád. The aggregate land revenue was about a *kror* and a third.

AGRA (formerly Biána) was a compact division extending from Kalpi to Rewári, and from Aligarh to the southern boundary of Narwar. Besides the metropolis it contained Gwáliar and other walled towns, cities and fortresses; the land-revenue was over a quarter of a million.

MÁLWA, a large province formed out of a conquered kingdom—stretched from the borders of Allahabad to those of Gujarát, and was famous for its woods, waters, wild flowers and fine scenery. The climate was much-esteemed and its fertility proverbial. Mándu was regarded as the capital; the land revenue exceeded sixty lakhs of Rupees.

KHÁNDES (named Dándes by Akbar in honour of his son Dányál) was a small but pleasant province between the Narbada and Tapti rivers, intersected by the Satpura hills, and having for capital the ancient fortified city of Burhánpur so often mentioned in the history of mediæval India. The land revenue was about seven lakhs and a half. The local governor in troubled times occupied the neighbouring fort of Asergarh, regarded as one of the strongest places in the empire.

GUJARÁT, another old Musalmán kingdom, was of great extent and

yielded a revenue—inclusive of customs—which exceeded a *kror* of Rupees. This province was largely washed by the sea; and, besides the native capital Ahmadábád, contained Baroda and other large towns. The Portuguese had a settlement at Surat and made encroachments, towards the end of Akbar's reign, over the neighbouring districts.

The so-called Subah of Aġmír was one of the largest provinces, answering nearly to the modern Rajputána. It was divided into three principal chiefships, Mewar, Marwar and Harauti—corresponding to the modern Rajadoms of Udaipur, Jodhpur and Kota-Bundi. Other principalities, such as Dhundar (Jaipur) were not apparently thought of much importance by Abul Fazl, as they are not named in his list. The country was fine, the climate healthy, and the population hardy; but the revenue was nothing more than a tribute estimated by Abul Fazl at Rs. 5,71,000 and paid (when payment could be compelled) by the Hindu chiefs who had been there before the Mughals came, and who very likely will be there after the British are gone. The Emperors were fond of the town of Aġmír, where a famous stock of Persian *darveshes* or hermits (the Chisties) had taken root. They also intermarried with the houses of Jaipur and Jodhpur; but the province can only be reckoned nominally among *Subahs*.

DġHLI was a province of average size, with a capital of the same name, and a revenue of one and a half *kror* from land.

LAġHOR was a rather larger one, with a capital of the same name and a revenue of nearly the same amount as Dġhli.

MġLTÁN was a long strip of sandy country lying along the left bank of the Indus. Capital Multán: revenue, nearly forty lakhs.

TATTAR was the rest of the Indus Valley; the revenue only about one lakh and sixty thousand Rupees.

KASHMġR, "the happy valley," and the scarcely less beautiful hills and dales of Kabul, were the Piedmont of the Asian Italy, valued for their climate, sport, and scenery. The revenue given by Abul Fazl is estimated in sheep and rice, with the exception of that of Kábul Sircar which is stated at twenty lakhs. Thomas estimates the total yield at no less than 80 lakhs. The aggregate of these items amounts to a little below 10 *krors*; but they include some *Síyar* items, though how much cannot be determined. In one or two instances in which these are stated separately, they are from 2 to 4 per cent.

Such was the territorial constitution of the Chaghtai territory till the conquests of Aurangzib. In 1694, Sr. Manucci made a fresh list of the provinces as they existed in his time; it is abstracted below, and the numbering has been brought into correspondence with the annexed sketch-map.

1.—BENGAL, without Orissa, was assessed at over four *krors* (which is three times more than in the other lists).

2.—BAHAR,	Rs. 1,21,50,000
3.—ORISSA (called by Manucci "Ureha"),.....	57,07,500
4.—ODDH (called "Rajmahal" apparently),	1,00,50,000
5.—DIHLI,	1,25,50,000
6.—AGRA,	2,22,03,550
7.—ALLAHABAD,	77,38,000
8.—LAHOR,	2,32,05,000
9.—KABUL,	32,07,250
10.—AJMÍR (Rajputána, temporarily subjugated and heavily assessed),	19,00,000
11.—MULTÁN,	50,25,000
12.—MÁLWA,	99,06,250
13.—GUJARA'T (probably including Customs),.....	2,32,95,000
14.—KHA'NDES,	1,11,05,000
15.—BERA'R,	1,58,07,500
16.—GONDWA'NA (no assessment given in any list but of Aurangzib's reign).	
17.—AURUNGÁBÁD, or a part thereof, (called "Bag- lana" from Bághelána a hilly tract in the heart of the Mahratta country. Tallies with estimates of Tavernier and Bernier,...	68,85,000
All Aurangábád or Daulatábád rated much higher in native lists.	
18.—BIJA'PUR,	5,00,00,000
19.—HAIDARÁBÁD (not named by Manucci, proba- bly included in "Golconda,".....	5,00,00,000
20.—BIDAI (<i>i. e.</i> "Nanda" aggregate in other lists running from 93 lakhs to over two <i>krors</i>),.....	72,00,000
<hr/>	
Total,.....	81,79,35,050
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It will be seen that there are discrepancies, both as to names and rating, between Manucci's list and those derived from native sources. But such, just a century after the completion of Abul Fazl's record, were the collections according to a European residing at the Imperial Court in a position of trust. Mr. Thomas calls Manucci "a competent witness at head-quarters." He does not name the Subahs always as they are named in other lists that have come down to us; and he gives some names (such as "Bakar" and "Ujain" that are not found elsewhere. And he estimates the returns of some higher and those of other lower than they are usually reckoned. But it must be admitted that his aggregate tallies pretty closely

with the totals of other lists. Of these the mean is about three and a half *krors*, while his total, as we see, is nearly thirty-two; and there can be little doubt that this is near the correct figure. It is not, however, so clear what it represents in the modern figures. It is true that the Rupee of those days contained about the same quantity of silver as does that of our own days: but we have the positive testimony of Manucci that the exchange value of the Rupee in the European currency of his day was "*trente sols*," or fifteen pence. In this he is confirmed by Tavernier, who says that fourteen Rupees were worth twenty-one *livres tournois*. Manucci's total therefore would be nearly worth twenty millions sterling.

It is a farther question, whether the separate revenue was equal in amount, or nearly so? The answer seems to be that the separate revenue was derived from sources too vague and fluctuating to be so estimated. It chiefly came from escheats and fines—to speak according to European usage—and the amount must have depended upon the character of the sovereign, the longevity of incumbents, and similar things, to an extent which would make it impossible to make an approximation for any one year.

Lastly, it is to be noted that, besides the provinces named above, the Empire had, for a few years of Aurangzib's reign, a claim—more or less practically exercised—to parts of the Bálághát, and the Malabar and Coromandel Coasts. But these were never made into regularly organised Subahs, nor did they appear upon the rolls, and they soon became totally independent.

2. *Land and Fresh-water Shells of Kashmir.*—By W. THEOBALD.
(Abstract.)

Enumerates 53 species of shells noticed by the author and 11 recorded species, in all 64; of these two are new species, *Hemiplecta Jamuensis* and *Pisidium Hydaspicola*, and a variety of *Helicarion Flemingii*, Pf. var. *altivagus*, Theob. which may possibly be entitled to specific rank when more specimens have been examined.

The PRESIDENT called attention to the importance of local lists like the present. Kashmir is a country on the borders of two great zoological regions, the Palaearctic and the Oriental, and like similar countries elsewhere, it possesses a fauna in which the distinctive forms of the two regions are blended in a very curious way. In the upper Indus valley the fauna is purely Palaearctic, but in Kashmir itself there is an admixture of Palaearctic forms with Oriental types allied for the most part to animals inhabiting the Himalayas.

LIBRARY.

The following additions have been made to the Library since the Meeting held in July last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,
presented by their respective Societies or Editors.

Berlin. Die Königliche Preussische Akademie der Wissenschaften,—Monatsberichte, Februar, 1878.

Bombay. The Indian Antiquary,—Vol. VII, Pts. 81 and 82, June and July, 1878.

Pt. 81. *E. Buhler*.—The three New Edicts of Asoka.

Pt. 82. *J. F. Fleet*.—Sanskrit and old Canarese Inscriptions, Nos. XL and XLI. *E. C. G. Crawford*.—Personal names in the Southern part of the Ahmadabad Collectorate and neighbouring country. *L. Rice*.—Chera or Gaiga grants of A. D. 350 and 481. *M. J. Walhouse*.—Archæological Notes, No. XX.

Calcutta. The Indian Forester,—Vol. III, No. 3, January 1878.

Records of the Geological Survey of India,—Vol. XI, Part 2, 1878.

W. T. Blanford.—On the Geology of Sind. *V. Ball*.—On the origin of the Kumaon Lakes. *T. W. H. Hughes* and *Dr. Waagen*.—Note on a trip over the Milam Pass, Kumaon. *F. R. Mallet*.—The mud Volcanocs of Rāmri and Cheduba. *F. R. Mallet*.—On the Mineral resources of Rāmri, Cheduba, and the adjacent Islands.

The Mahabharata,—No. 23.

Cambridge. Museum of Comparative Zoology,—Bulletin, Vol. V, No. 1.

Florence. Società Toscana di Scienze Naturali,—Processi verbali, Maggio 1878.

London. The Athenæum,—Nos. 2638, 2639, 2640 and 2641, May, June 1878.

The Geographical Magazine,—Vol. 5, No. 5.

Nature,—Vol. 18, Nos. 446, 447 and 449.

The Royal Society,—Proceedings, Vol. 27, No. 186.

J. S. Lombard.—Experimental Researches on the Temperature of the Head. *Dr. Tyndall*.—Recent experiments on Fog-Signals. *Gustav Bischof*.—On putrescent Organic matter in Potable Water. *B. T. Lowne*.—On the modifications of the Simple and Compound Eyes of Insects. *W. Turner*.—On the Placentation of the Apes with a comparison of the Structure of their Placenta with that of the Human Female.

London. Royal Astronomical Society,—Monthly Notices, Vol. 38, No. 5.

Mr. Stone.—On the Telescopic Observations of the Transit of Venus 1874, made in the expedition of the British Government, and on the conclusions to be deduced from those Observations. *Mr. Eerek.*—Improvements in a Solar Spectroscope, made by Mr. Grubb for Professor Young. *Capt. Tupman.*—Notes on the Mean Solar Parallax as derived from the Observations of the recent Transit of Venus.

———. Royal Institution of Great Britain,—Proceedings, Vol. 8, Parts 3 and 4, Nos. 66 and 67, and a List of Members.

No. 67. *Richard Strachey.*—Physical causes of Indian Famines. *Prof. Tyndall.*—Putrefactive and Infective Organism from Physical Point of View.

Lyon. Société de Géographie,—Bulletin, No. 9, Janvier 1878.

Roma. R. Accademia dei Lincei,—Atti., Vol. 2, Fasc. 5°, Aprile 1878.

St. Petersburg. Société Impériale Russe de Géographie,—Séance mensuelle, Avril 1878.

———. Records of the Imperial Russian Geographical Society, 1877.

PERIODICALS PURCHASED.

Bombay. Medical and Physical Society,—Transactions, Vol. 2, Nos. 3 to 10. (*New Series*) Nos. 1 to 11.

———. The Vedārthayātna, or an attempt to interpret the Vedas,—No. 16, Pt. II, March 1878.

Bordeaux. Société de Géographie Commerciale,—Bulletin, Nos. 9 to 11, (*2nd Série*) Mai et Juin 1878.

Calcutta. The Indian Medical Gazette,—Vol. XIII, No. 6.

Cambridge. The Messenger of Mathematics,—No. 84, April 1878.

Göttingen. Göttingische Gelehrte Anzeigen, Stück 19 to 21, 1878.

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Leipzig. Annalen der Physik und Chemie,—Band 3, Heft 4, No. 4, Band 4,* Heft 1, No. 5, and Band 2, Stück 5, No. 5, 1878.

Band 4.* *E. Lommel.*—Theorie der Doppelbrechung.

London. The Academy,—Nos. 315-318, 1878.

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No. 964. *Prof. Hughes.*—On the action of Sonorous Vibrations in varying the Force of an Electric Current. *S. Kern.*—On the Chemical and Mechanical Analyses of Cast-Steels.

No. 966. *G. R. Tweedie.*—A process for coating Iron with Magnetic Oxide by the Action of Heated Air. Improvements in the Method of Preserving Animal and Vegetable Food. On Indigo-Blue from *Polygonum tinctorium* and other Plants.

London. The Edinburgh Review,—No. 302, April 1878.

———. The Quarterly Review,—No. 290, April 1878.

The Princes of India and the Proclamation of the Empire.

———. The Entomologist,—Vol. 11, No. 180.

———. The Entomologist's Monthly Magazine,—Vol. 14, No. 168.

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W. Ramsay.—A Synopsis of the Genus *Pomatorhinus*. Plates III and IV.

———. The Journal of Botany,—Vol. 7, No. 185, 1878.

M. Moore.—Alabastra Diversa.

———. The London, Edinburgh, and Dublin Philosophical Magazine,—Vol. 5, No. 32.

R. Mallet.—Rate of Earthquake-wave Transit. Dr. L. Bleekrode.—On the Electric Conductivity and Electrolysis of Chemical Compounds.

———. The Annals and Magazine of Natural History,—Vol. 1, No. 5.

A. G. Butler.—Description of New Species of *Heterocera* from Japan. Part 3, *Geometrites*.

———. Journal of the Society of Arts,—Vol. 26, Nos. 1330-1333, 1878.

No. 1330. R. M. Gover.—Dietaries, in their Physiological, Practical, and Economic Aspects.

No. 1331. F. C. Danvers.—Agriculture in India. F. J. Ritchie.—Controlling and Correcting Clocks by Electricity.

———. The Nineteenth Century,—No. 15, 1878.

———. The Westminster Review,—No. 106, April 1878.

Popular Buddhism according to the Chinese Canon. An Indian District: Its People and Administration.

———. Reeve's Conchologia Iconica,—Pts. 340-341.

New Haven. The American Journal of Science and Arts,—Vol. 15, No. 88, 1878.

A. M. Mayer.—Experiments with Floating Magnets. S. P. Langley.—Janssen Solar Photograph and Optical Studies.

Paris. Comptes Rendus,—Tome 86, Nos. 18-21, 1878.

No. 20. M. A. Levy.—Sur la recherche de l'ozone dans l'air atmosphérique.

———. Revue des Deux Mondes,—Tome 27, 48^e Année, 2^e Liv., and Tome 27, 48^e Année, 3^e Liv. 1878.

———. Revue Scientifique,—Nos. 45-49.

———. Revue Critique,—Nos. 19-22, 1878.

No. 19. Garcin de Tassy.—La Langue et la littérature hindoustanie en 1877.

No. 22. Eleven land-grants of the Chaulukyas of Anhilvâd. A contribution to the history of Gujarât.

MISCELLANEOUS PRESENTATIONS.

MACKENZIE, F. J. M. Routes in Asia, Section II. Rl. 8vo., Calcutta, 1878.

FAWCETT, R. H. Routes in Asia, Sec. III. Rl. 8vo., Calcutta, 1878.

MACGREGOR, C. M. Routes in Asia, Sec. IV. Rl. 8vo., Calcutta, 1878.

SAWARD, M. H. Routes in Asia, Sec. V. Rl. 8vo., Calcutta, 1878.

BROWNRIGG, H. S. Routes in Asia, Sec. VI. Rl. 8vo., Calcutta, 1878.

THE QUARTER-MASTER GENERAL'S DEPARTMENT.

LETHBRIDGE, A. S. Administration Report on the Jails of Bengal, for 1877. 4to., Calcutta, 1878.

A. S. LETHBRIDGE.

METCALFE, C. T. Annual Report on the Police Administration of the town of Calcutta and its Suburbs, for 1877. 4to., Calcutta, 1878.

C. T. METCALFE.

LOTH, Q. A Catalogue of the Arabic Manuscripts in the Library of the India office, (2 copies). 4to., London, 1877.

GOVERNMENT OF INDIA, HOME DEPARTMENT.

Report on the Gaols of the Central Provinces, for 1877.

Report on the Police Administration of the Central Provinces for 1877.

Report on the Lunatic Asylums in the Central Provinces for 1877.

Report on the working of the Government Charitable Dispensaries in the Central Provinces for 1877.

CHIEF COMMISSIONER, CENTRAL PROVINCES.

Selections from the Records of the Madras Government, No. LXIII, for 1876-77. 8vo., Madras, 1878.

GOVERNMENT OF MADRAS.

TAYLOR, A. D. General Report on the operations of the Marine Survey of India for 1876-77. 4to., Calcutta, 1878, (2 copies).

COMMANDER A. D. TAYLOR.

BOOKS PURCHASED.

BRANER, F. Reise der Oesterreichischen Fregatte Novara, Zoologischer Theil, Heft 2. 4to., Wien, 1866.

FELDER, R. and ROGENHOFER, A. F. Reise der Oesterreichischen Fregatte Novara; Zoologischer Theil, Heft 4. 4to., Wien, 1874.

———. ———. Reise der Oesterreichischen Fregatte Novara; Zoologischer Theil, Heft 5. 4to., Wien, 1875.

FORREST, JAS. Minutes of Proceedings of the Institution of Civil Engineers, with other selected papers, Vol. LI, Pt. I, Session 1877-78. London, 1878.

GOULD, J. Birds of Asia, Pt. XXX. folio, London, 1878.

———. Birds of New Guinea, Pts. V, VI. London, 1877-78.

LOCKYER, J. N. Studies in Spectrum Analysis. 8vo., London, 1878.

MAYR, DR. G. L. Reise der Oesterreichischen Fregatte Novara: Zoologischer Theil, Heft 5. 4to., Wien, 1866.

SCHINER, DR. J. R. Reise der Oesterreichischen Fregatte Novara: Zoologischer Theil, Heft 4. 4to., Wien, 1868.

WRIGHT, WM. Facsimiles of Ancient Manuscripts, etc., Pt. II. folio, London, 1877.

ZUCKERKAUDL, DR. E. Reise der Oesterreichischen Fregatte Novara: Anthropologischer Theil. 4to., Wien, 1875.

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# PROCEEDINGS

## OF THE

# ASIATIC SOCIETY OF BENGAL.

FOR AUGUST, 1878.

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The Monthly General Meeting of the Asiatic Society was held on Wednesday, the 7th Instant at 9½ o'clock P. M.

W. T. BLANFORD, F. R. S., President, in the Chair.

The Minutes of the last Meeting were read and confirmed.

The following presentations were announced—

1. From the Secretary to the Bengal Government.  
Report of the Jails of Bengal, 1877. By A. S. Lethbridge, Esq.
2. From the Madras Government, Report on the Administration of the Madras Presidency for 1876-77 ; and Report of Vaccination.
3. From the Chief Commissioner, Central Provinces, Report of the Registration Department.
4. From Captain W. Clarke, the author,—a Persian Manual.
5. From Capt. A. D. Taylor, Charts of the Singora Roads.
6. From O. Böhtlingk, the author,—a Sanskrit Chrestomathie.
7. From L. H. Mitchell, Esq., the author,—Report on the Seizure by the Abyssinians of the Geological and Mineralogical Reconnaissance Expedition attached to the General Staff of the Egyptian army.
8. From the Under-Secretary to the Government of India,—one Gold and two Silver Coins, found at Baroda.

The following Gentlemen, duly proposed, and seconded, at the last Meeting, were ballotted for, and elected Ordinary Members.

1. Pierce DeLacy Henry Johnstone, Esq., B. C. S., M. A. of Balliol College, Oxford, formerly Taylorian and Boden University Scholar.
2. Major T. H. Lewin, re-elected.
3. Dr. E. Laurie.

The following are candidates for ballot at the next meeting.

1. A. H. Anthony, Esq., Asst. to Contr.-Genl., Financial Department, proposed by H. K. W. Arnold, Esq., seconded by H. B. Medicott, Esq.
2. R. Whittall, Esq., Forest Department, British Burmah, proposed by Dr. G. King, seconded by W. T. Blanford, Esq.
3. The Right Rev. Bishop of Rangoon, proposed by W. T. Blanford, Esq., seconded by T. S. Isaac, Esq.
4. P. C. Wheeler, Esq., C. S., Asst. Magistrate, Ghazipore, proposed by H. Rivett-Carnac, Esq., seconded by H. B. Medicott, Esq.

The SECRETARY announced that Capt. C. H. Cowan had intimated his desire to withdraw from the Society.

The PRESIDENT announced the death of Mr. Henry Blochmann, Philological Secretary to the Society, and said—

We miss from amongst our number to-night, one who has for so long been a most prominent and valuable member, one to whom we have so often listened with pleasure, and who has added so greatly to the welfare of the Society, that it will be long before we shall be able to reconcile ourselves to the loss we have sustained.

It would be impossible for me to express adequately all that we have lost in Mr. Blochmann; there is no member who has worked more earnestly, more energetically, or more constantly for our Society, no one who has equal experience as an officer, no one whose death could have inflicted a greater blow to the progress of the work in which we are all interested. In every department of the Society's affairs; in the editing of our publications, in the conduct of our correspondence, in the supervision of our finances, in the arrangement of our Library, a foremost part, and very frequently the principal labour, was cheerfully taken by our late Philological Secretary, and his death has left us simply unable to replace him. Apart from his high merits as an Oriental Scholar and his energetic participation in the Society's affairs, he was beloved and esteemed by all who knew him, for his kindly manner and his willingness on all occasions to undertake any task that was necessary. Heartily good-natured, thoroughly independent, and with true German love of hard work, he could equally be depended upon for an honest original opinion on any subject that came before us; and for any labour that might be necessary for the Society.

It has been said very often, and the fact cannot be repeated too frequently, that the well-being and usefulness of this Society depend chiefly upon its Secretaries. Very few indeed have held the post so long as Mr.

Blochmann, who has been Philological Secretary of the Society for nearly 11 years. It is unnecessary that I should give you any detailed account of the work he has done in the meantime, nor should I be competent to do so if it were necessary; I must leave the task to those who are more conversant with Oriental literature. The Journal and Proceedings of the Society, crowded with Mr. Blochmann's contributions, answer for him, and it is impossible that any member needs to be reminded of the value of our late Secretary's labours. Mr. Blochmann's studies, as you are all doubtless aware, embraced a wide circle of Arabic and Persian literature, but his especial study, the subject on which he had probably acquired more knowledge than has ever been attained by any other European, or perhaps even by any native of India, was the History of India under the Muhammadan rule. On all subjects relating to Muhammadan India the extent and accuracy of his knowledge was something wonderful; and he spared no effort to obtain fresh information. Manuscripts, inscriptions, coins,—all records of the times,—have been noticed by him frequently and fully in the Journals and Proceedings of the Society. His death in the midst of his career and in the prime of life has deprived the world of a mass of information as to the history of this country, information which is not likely to be again attained for a long time to come by any single individual. His most important work, the translation of the *Ain-i-Akbari*, has unfortunately been left incomplete.

All these writings are before the world, but a large amount of work falls upon our Secretaries, and is entirely unrecorded; indeed it is as a rule only known to members of the Council. I will mention but one instance of Mr. Blochmann's labours. For the last ten or twelve years a catalogue of the Society's Library has been a most urgent want. Attempt after attempt has been made to prepare one, but all have failed, because no officer of the Society, who possessed the requisite knowledge, could afford the time, and was willing to give the very large amount of supervision necessary. The difficulty is due to the great number of languages represented, and the wide range of subjects treated in the books contained in the Society's Library. At length last year the task was undertaken by Mr. Blochmann, and under his superintendence, and in a very great measure by his personal labour, a complete list of the books has at length been made, and if, as I hope, something like an accurate Catalogue is published in the course of the next few months, the members of this Society will be indebted to Mr. Blochmann alone for the boon they will obtain.

The following is a brief sketch of our late friend's career. He was born at Dresden on the 7th January, 1838, and was first educated at



the Kreuz-Schule of that city. From 1855 to about September 1857, he studied Hebrew and Oriental languages at the University of Leipzig under Professor Fleischer. He afterwards studied for a short time in Paris, and in 1858 he left Europe for India, being chiefly induced to this step by his love for oriental studies, and he landed in Calcutta, nearly 20 years ago, in September, 1858. At first he appears, for want of employment, to have been reduced to great straits, and he at one time enlisted in the army, but he soon found a friend in Captain Nassau Lees, then Principal of the Calcutta Madrassa, by whose assistance Mr. Blochmann was appointed to a subordinate post in the Madrassa College in 1860. He left this post in the beginning of 1862 to become Professor of Mathematics at the Doveton College, a post he held for about three years. He studied meantime energetically, and in 1865 took the degree of Master of Arts in the Calcutta University, having chosen Hebrew as the subject for his examination. It is related that when, after some difficulty, examiners were found competent to decide upon his proficiency, they found the student was far better acquainted with the language than they were themselves. In the same year Mr. Blochmann rejoined the Madrassa as Assistant Professor, Captain Nassau Lees remaining as the Principal until 1869, when he retired, and at first no successor was appointed, but a committee exercised supervision, whilst Mr. Blochmann was placed in charge of the College, retaining his title of Professor. He was appointed to officiate as Principal in 1870 and was made Principal in 1875. How, in the course of the time that he has held the office, he has endeared himself to the Students of the College and to the whole Muhammadan community, is shewn by the general sorrow for his death and by the Muhammadan meeting of last week to do honour to his memory.

Mr. Blochmann joined the Society in 1864 and entered the Council, when he became Secretary in succession to Mr. Heeley, in 1868. He retained the office until his death. He had been ailing slightly for about a month, and although, as all may remember, the most regular of attendants at our monthly Meetings, he was absent on the last occasion in July. Still no danger was suspected, he was supposed to be suffering from a slight attack of fever, and he had made arrangements to leave Calcutta for a short time and go to Dalhousie.

Only three or four days before his death, was there any suspicion of the real cause of his illness, renal disease, and even then no acute symptoms presented themselves. On the very day when he had proposed to leave Calcutta his illness increased, and the next morning he was found

to be suffering from severe uræmic poisoning. He fell into an unconscious state about midday, and died three hours afterwards.

The Council of the Society desire to preserve some Memorial of our late Secretary, in recognition of the valuable services rendered by him, for so many years, to the Society and to Oriental Literature. A Committee has been appointed to consider the best means of carrying out this project, and it has been determined to apply to the Members of the Society and to Mr. Blochmann's other friends for subscription towards a memorial bust or portrait.

I have only to add in conclusion, that I propose, with the consent of the Members present, as a tribute of respect to our late Secretary, to close the present meeting and to take as read such papers as remain for consideration. I would also suggest that an expression of our sorrow, and sympathy with their loss, should be sent to Mr. Blochmann's widow and family.

The PRESIDENT announced, in consequence of the death of Mr. Blochmann, that Mr. C. H. Tawney had been appointed Member of Council and Philological Secretary.

The PRESIDENT announced that Mr. E. Gay had resigned his office as Member of Council and Treasurer to the Society in consequence of his departure from Calcutta, and that Mr. H. Beverley had been appointed in his place.

## LIBRARY.

The following additions have been made to the Library since the Meeting held in July last.

### TRANSACTIONS, PROCEEDINGS AND JOURNALS,

*presented by the respective Societies or Editors.*

Baltimore. Mathematics, pure and applied,—Journal, Vol. 1, No. 1.

Batavia. Natuurkundig Tijdschrift voor Nederlandsch—Indië,—Deel 37.

Belgique. Société Géologique,—Annales, Tome II, III, 1874-75, 1875-76.

Berlin. Königlich Preussische Akademie der Wissenschaften,—Monatsbericht, März und April, 1878.

Calcutta. The Indian Forester,—Quarterly Magazine, Vol. 3, No. 14, April 1878.

*Kad Handi*.—Notes on Sandal. *B. H. B. P.*—On some of the Results of Forest Meteorological Observations. *W. T. T. Dyer*.—The Rain-Tree of Moyobamba. *Dr. R. Schomburgk*.—South Australian Eucalypts.

———. The Mahábhárat,—Vol. 5, Fasc. 24.

———. The Yajurveda Sanhita,—Vols. 30-33, 1878.

———. Geological Survey of India,—Records, Vol. 11, Pts. 1 and 2.

Part 1. Annual Report of the Geological Survey of India, and of the Geological Museum, Calcutta, for 1877. *R. Lydekker*.—Notes on the Geology of Kashmir, Kishtwar, and Pangi. Notices of Siwalik Mammals. *W. T. Blanford*.—The Palæontological relations of the Gondwana System. A reply to Dr. Feistmantel. *A. B. Wynne*.—On "Remarks &c., by Mr. Theobald upon Erratics in the Punjab."

Part 2. *W. T. Blanford*.—On the Geology of Sind, (2nd Notice). *V. Ball*.—On the Origin of the Kumaun Lakes. *F. R. Mallet*.—The Mud Volcanoes of Rámri and Cheduba.

Leipzig. Deutsche Morgenländische Gesellschaft,—Zeitschrift, Heft 4, 1877.

*H. L. Fleischer*.—Zu Rückerts Grammatik, Poetik und Rhetorik der Perser. *T. Aufrecht*.—Lomaçatana. *A. Sprenger*.—Ueber zwei arabische Handschriften. *E. Meyer*.—Ueber einige semitische Götter. *W. Deecke*.—Ueber das indische Alphabet in seinem Zusammenhange mit den übrigen südsematischen Alphabeten.

London. Institution of Mechanical Engineers,—Proceedings, April 1878.

———. The Athenæum,—Nos. 2642-2645, 1878.

———. The Geographical Magazine,—Vol. 5, No. 6.

*R. Michell*.—Russian Expedition to the Alais and Pamir. Topographical and Revenue Surveys of India, 1876-77. Retirement of Major General Thuillier.

———. The Anthropological Institute of Great Britain and Ireland,—Journal, Vol. 7, Nos. 2, 3.

———. The Statistical Society,—Journal, Vol. 41, Part 1, March, 1878.

———. Royal Astronomical Society,—Monthly Notices, Vol. 38, Nos. 6 and 7, April and May 1878.

———. Nature,—Vol. 18, Nos. 448-453.

———. Royal Geographical Society,—Proceedings, Vol. 22, Nos. 1-3.

No. 3. *J. Bryce*.—On Armenia and Mount Ararat. *F. J. Evans*.—Lecture on the Magnetism of the Earth.

———. Zoological Society,—Transactions, Vol. 10, Part 6.

———. Proceedings, Part 1, June 1878.

*F. Moore*.—A Revision of certain Genera of European and Asiatic Lithosiidæ, with Characters of new Genera and Species. *Arthur, Marquis of Tweeddale*.—Contributions to the Ornithology of the Philippines. On a new Philippine Genus and Species of Bird.

———. Geological Society,—Quarterly Journal, Vol. 34, Pt. 2, No. 134.

*A. B. Wynne*.—On the Physical Geology of the Upper Punjab.

Moscow. Société Impériale des Naturalistes,—Bulletin, No. 3, Année 1877.  
 München. Philosophisch-Philologische Classe der Königlich Bayerischen  
 Akademie der Wissenschaften,—Abhandlungen.

———. ———. Sitzungsberichte,—Heft 3, 4, 1877.

Heft 3. *J. Jolly*.—Ueber das indische Schuldrecht.

Palermo. Società Degli Spettroscopisti Italiani,—Memorie, Dispensa 5a,  
 Maggio, 1878.

Paris. Journal Asiatique,—Tome 10, No. 3, Octobre-Décembre, 1877.

Philadelphia. Academy of Natural Sciences,—Proceedings, Parts 1-3, 1877.

Prag. Astronomische, Magnetische und Meteorologische Beobachtungen,  
 Jahr 1877.

Roma. R. Accademia Dei Lincei,—Atti, Vol. 2, Fasc. 6, Maggio, 1878.

St. Petersburg. Académie Impériale des Sciences,—Bulletin, Tome 24,  
 Nos. 1-4.

No. 1. *C. J. Maximowicz*.—Diagnoses de nouvelles plantes asiatiques II. *J.*  
*F. Braudt*.—Remarques sur la famille des Rhinocerotides.

No. 2. *A. F. Mehren*.—Description d'une médaille mongole d'Abou-Saïd Bé-  
 hádur Khan de la dynastie Ilkhanienne.

No. 3. *O. Böhtlingk*.—Second supplément pour mon ouvrage sur les sentences  
 indiennes.

No. 4. *A. Schiefner*.—Contes indiens XL-XLIV.

———. Repertorium für Meteorologie, herausgegeben von der Kaiserli-  
 chen Akademie der Wissenschaften,—Band 5, Heft 2.

———. Akademie Impériale des Sciences,—Mémoires, Tome 24, Nos.  
 4-11. Tome 25, Nos. 1-4, 1877.

Stettin. Entomologische Zeitung,—Nos. 1-3, 1877.

Vienna. Die Culm-Flora der Ostraner und Waldenburger Schichten,—  
 Abhandlungen, Band 8, Heft 2.

———. Archiv für Oesterreichische Geschichte,—No. 4, 1877.

———. Akademie der Wissenschaften, Philosophisch-Historische Classe,  
 Denkschriften.

———. ———. Mathematisch-Naturwissenschaftliche Classe,—Denk-  
 schriften.

———. ———. Mathematisch-Naturwissenschaftliche Classe,—Si-  
 tungsberichte, Band 73, Heft 1-5, Jänner-Mai 1876.

———. ———. Philosophisch-Historische Classe,—Sitzungsberichte,  
 Band 82, Heft 3, März 1876.

———. K. K. Geologische Reichsanstalt,—Jahrbuch, Band 27, Juli—  
 December 1877.

———. Oesterreichische Geschichts-Quellen, herausgegeben von der His-  
 torischen Commission der Kaiserlichen Akademie der Wissenschaften,—  
 Acta, Band 39-40.

———. Anthropologische Gesellschaft,—Mittheilungen, Band 7.

Yokohama. Asiatic Society of Japan,—Transactions, Vol. 6, Part 1.

*J. H. Gubbins*.—Review of the Introduction of Christianity into China and Japan. *E. M. Satow*.—The Introduction of Tobacco into Japan. *B. H. Chamberlain*.—The Maiden of Unahi. *T. R. H. McClatchie*.—The Castle of Yedo. *Dr. W. Anderson*.—Kak'ké. *Dr. H. Faulds*.—Remarks on the Dojô.

———. Deutsche Gesellschaft für Natur-und Völkerkunde Ostasien's,—Mittheilungen, Heft 14, April 1878.

### PERIODICALS PURCHASED.

Benares. A New Hindustani-English Dictionary,—by Dr. S. W. Fallon, Part 15.

Berlin. Reine und angewandte Mathematik,—Journal.

Bordeaux. Société de Géographie Commerciale,—Bulletin, Nos. 12 et 13, Juin et Juillet 1878.

Calcutta. The Indian Medical Gazette,—Vol. 13, No. 7, July 1878.

———. The Calcutta Review,—July 1878.

*H. G. Keene*.—General de Boigne. *H. R. Fink*.—Ancient Hindu Tribunals. *G. W. Leitner*.—A note on Classical Allusions to the Dards and to Greek Influence on India.

Göttingen. Göttingische gelehrte Anzeigen,—Stück 22-25, Mai und Juni 1878.

———. Königliche Gesellschaft der Wissenschaften,—Nachrichten, Nos. 8-11.

Leipzig. Annalen der Physik und Chemie,—Band 4, Heft 2, No. 6.

*E. Wiedemann*.—Beiträge zur Geschichte der Naturwissenschaften bei den Arabern IV.

———. ———. Beiblätter,—Band 2, Stück 6.

London. The Academy,—Nos. 319-322.

———. The Annals and Magazine of Natural History,—No. 6, June 1878.

———. The Chemical News,—Vol. 37, Nos. 968-971, June and July 1878. No. 968. *Prof. How*.—Some Reactions with Lindo's Test for some of the Bases in Opium.

———. The Entomologist,—Journal, Vol. 11, No. 181.

———. ———. Monthly Magazine,—Vol. 15, No. 169, June 1878.

———. Botany,—Journal, Vol. 7, No. 186, June 1878.

———. The Society of Arts,—Journal, Vol. 26, Nos. 1334-1337, June and July 1878.

———. The Philosophical Magazine and Journal of Science,—Vol. 5, No. 33.

———. The Messenger of Mathematics,—Nos. 85, 86, May and June 1878.

London. The Nineteenth Century,—No. 16, June 1878.

*His Highness Midhat Pasha.*—The past, present and future of Turkey. *Right Hon. W. E. Gladstone.*—Liberty in the East and West.

———. The Numismatic Chronicle and Journal of the Society,—No. 69, Pt. 1.

———. Mathematics,—Quarterly Journal, No. 59, April 1878.

New Haven. The American Journal of Science and Arts,—Vol. 15, No. 89, May 1878.

Paris. Annales de Chimie et de Physique,—5<sup>me</sup> Série, T. 13, April 1878.

———. Comptes Rendus,—Tome 86, Nos. 22-25.

———. Journal des Savants,—Mai 1878.

———. Revue des Deux Mondes,—Juin et Juillet 1878.

———. Revue Critique, Nos. 23-26, Juin 1878.

———. Revue Scientifique,—No. 51, Juin 1878.

## BOOKS AND PAMPHLETS.

*presented by the Authors.*

BÖHTLING, OTTO. Sanskrit Chrestomathie. St. Petersburg, 1877.

CLARKE, CAPT. H. W., R. E. The Persian Manual. London, 1878.

HUTCHINSON, C. W. Various Vernacular Characters passing through the Foreign Post Office in India. December, 1877.

MITCHELL, L. H. Report on the Seizure by the Abyssinians of the Geological and Mineralogical Reconnaissance Expedition, attached to the General Staff of the Egyptian Army. Cairo, 1878.

WILD, H. Die Temperatur Verhältnisse des Russischen Reiches. St. Petersburg, 1877.

## MISCELLANEOUS PRESENTATIONS.

Report on the working of the Registration Department in the Central Provinces for the years 1877-78. Nagpur, 1878.

CHIEF COMMISSIONER, CENTRAL PROVINCES.

The Law relating to Minors in the Presidency of Bengal. Calcutta, 1878.

CALCUTTA UNIVERSITY.

Report of the Administration of the Madras Presidency for the year 1876-77. Madras, 1878.

GOVERNMENT OF MADRAS.

Report on Vaccination throughout the Presidency and Provinces of Madras for the year 1876-77. Madras, 1878.

GOVERNMENT OF MADRAS.

• Charts of the Singora Roads and inner Harbour.

MARINE SURVEY DEPARTMENT.

## BOOKS PURCHASED.

- BEALS, SAMUEL. Texts from the Buddhist Canon, commonly known as Dhammapada. 8vo., London, 1878.
- DOUGLAS, R. K. The Life of Jenghiz Khan. 8vo., London, 1877.
- FRIEDERICI, CIAS. Bibliotheca Orientalis. 8vo., London, 1877.
- GUBERNATIS, ANGELO DE. Zoological Mythology, Vols. 1 and 2. 8vo., London, 1872.
- HAUGH, M. Essays, on the Writings and Religion of the Parsis. 8vo., London, 1878.
- MALLESON, G. B. History of the Indian Mutiny, 1857-58. Vol. 1, 8vo. London, 1878.
- NARES, CAPT. SIR G. S. Voyage to the Polar Seas, Vols. 1 and 2. 8vo., London, 1878.
- PALGRAVE, W. G. Narrative of a Journey through Central and Eastern Arabia, 1862-63. 8vo., London, 1877.
- WALLACE, A. R. Tropical Nature. 8vo., London, 1878.
- WEBER, A. Pañcādāṇḍachattaprabandha. 4to., Pamphlet, Berlin, 1877.
- A New Pocket Dictionary of the English and Russian and Russian and English Languages. Demi 8vo., Leipsic.
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PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL,  
FOR NOVEMBER, 1878.

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The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 6th instant, at 9 o'clock P. M.

W. T. BLANFORD, F. R. S., President, in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced :—

1. From H. E. the Viceroy and Governor-General, J. Talboys Wheeler's History of the Imperial Assemblage at Delhi.
2. From the author, W. T. Blanford, Esq., Scientific Results of the Second Yarkand Mission. Geology.
3. From the author, Babu Adharlal Sen, Kusum-Kānan.
4. From the author, Babu Rajendra Nath Dutt, The Bharatya Granthabali.

5. From E. Linstedt, Esq., Lieut. Hawkes' Coins of Mysore.

6. From the author, F. V. Hayden, Esq., Report of the United States Geological Survey of the Territories; also Jackson's Descriptive Catalogue of Photographs of North American Indians.

The following gentlemen, duly proposed and seconded at the last Monthly General Meeting and Council Meetings of September and October, were ballotted for and elected Ordinary Members—

A. H. Anthony, Esq.

R. Whittall, Esq.

P. C. Wheeler, Esq.

The Right Rev. the Bishop of Rangoon.

S. G. Hughes, Esq., C. S.

T. D. Beighton, Esq., C. S.

The Rev. J. Robertson.

The Hon'ble J. Sewell White.



The following are candidates for ballot at the next meeting—

1. Rajah Lachman Singh, Deputy Collector, Bullundshahar, proposed by F. S. Growse, Esq., seconded by Dr. Rudolf Hoernle.

2. Babu Krishna Gopal Bhakta, proposed by Babu Adharlal Sen, seconded by Dr. R. L. Mitra.

The SECRETARY announced that Major Lewin and Mr. J. Murray had requested that their election might be cancelled.

The SECRETARY announced that Mr. C. Pearson and Mr. C. A. Elliott, had intimated their desire to withdraw from the Society.

The SECRETARY announced that the Rev. Dr. A. F. Rudolf Hoernle had been appointed Philological Secretary, in the room of Mr. C. H. Tawney, who had conducted the duties temporarily.

The SECRETARY read a notice of a prospectus received from Dr. Barth, of a new Chart of the Moon, to be published in 25 Sections, by W. G. Lohrmann.

Mr. Joh. Ambr. Barth of Leipzig has sent the prospectus of a new chart of the moon, by W. G. Lohrmann. The chart consists of 25 Sections with two tables of explanations. There is added to it a descriptive text by Dr. J. F. Julius Schmidt, Director of the Observatory in Athens. The price is £2 10s.

The chart was begun by Lohrmann in 1821. The first part was published in 1824. In 1840 Lohrmann died, and for some years the work remained in abeyance. But in 1851 Dr. J. Schmidt was prevailed upon by the publisher, W. A. Barth, and after his death, his son F. A. Barth, to continue it with the assistance of W. Opelt of Dresden, and after his death (1863) of his son, Lieut. Opelt. At last the work was finished in 1874. To the chart will be added a text, describing its method; also a catalogue of all selenographic positions calculated by Opelt. There will be a brief explanation of each section, in which the more important differences of height will be noted, and all remarkable points noticed. The principal merit of the work lies in Lohrmann's *drawing*, which closely resembles that of Maedler's famous chart. His object was, to represent as faithfully as possible the mountains and the colour of the moon, and to execute the measurements and drawings according to methods approved of by science. Accordingly he chose the orthographic projection of the visible hemisphere of the moon and the mean libration, drew the mountains according to Lohrmann's method, and without indications of their varying illumination. Owing to the long delay in the execution of the work, there is a noticeable want of uniformity in the colouring of the plates. Maedler's chart is much more satisfactory in this respect.

Mr. MALLER exhibited a Meteorite, forwarded to the Indian Museum by Hugh Fraser, Esq., from Gorakhpur.

The two meteoric stones now exhibited fell near Dandapur (Lat.  $26^{\circ}$ ,  $56'$  N., Long.  $83^{\circ}$ ,  $58'$  E.), a village 5 miles W. N. W. of the town of Pudrownan, in the Gorakhpur district, on the evening of the 5th of September last, and were forwarded to the Indian Museum by Mr. Hugh Fraser, Assistant Magistrate of Gorakhpur, with all the information he could procure respecting the occurrence, which is as follows: "About 5 p. m. some people in the villages of Barchua and Dandapur saw what they describe as a wedge-shaped cloud coming up from the north-east. It advanced from that direction, and seemed to descend, and then there was a noise like thunder. They say their eyes closed, but it is not clear from the wording whether on account of a flash, or on account of fear. The fragments fell—one through the house of Salāmdari; one in a field on the boundaries of the neighbouring village Sirsa, about 300 paces distant from the first, and another, not yet recovered, in a tank. In the two first places a hole was made in the ground about a span in depth and a cubit in diameter; there was some delay in digging out, and when taken out, the stones were not warm."

According to the above account, the fragments fell at a distance of some 300 paces from each other. It will be observed, notwithstanding, that on the fractured faces they fit each other exactly, the two forming the halves of a single stone, which prior to its fracture was covered entirely by the usual brownish-black crust. The larger fragment weighs about 6 lbs. 9 oz., and the smaller about 5 lbs. 14 oz., the two together forming an irregular, somewhat wedge-shaped mass, measuring about 7 inches by 7, with an average thickness of about 3 inches, but thinning off considerably towards one side. The specific gravity of the larger piece was found to be 3.29.

On a fresh fracture, the meteorite is seen to consist of a minutely crystalline white mass, composed of translucent grains of one or more silicates, through which specks with metallic lustre are plentifully distributed. Most of these are small, so that they are distinctly visible only under the lens, but others are of larger dimensions, one or two being about an eighth of an inch in diameter. The greater number of these are troilite or pyrrhotite, but a considerable proportion are of nickeliferous iron. The occurrence of phosphorus, also, seems to indicate the presence of schreibersite. On the faces of original fracture the meteorite presents an ochry mottling due to the oxidation of the iron; but there is no sign of the crust that covers all the rest of the surface. In this connection it will be interesting to notice whether the third piece, if it can be recovered, should appear to have been originally united to these.

The following papers were read—

1. *Some further notes on Kālidāsa.*—By G. A. GRIERSON. B. C. S.  
(Abstract.)

This paper contains some legendary traditions current in Behār, concerning the famous poet Kālidāsa, who was born at Dāmodarpur, a village near the town of Achait in Tirhut. They are all chiefly illustrative of his great powers of improvisation. The first legend narrates a story of his youth ; how being at first little better than an idiot, he afterwards came to be possessed of his unrivalled power over the Sanskrit language by the special interposition of the goddess Durgā. The second legend is an amusing story about Kālidāsa at the court of Rājā Sibhai Singh. This Rājā was a great patron of paṇḍits ; but he was wont to regulate his patronage not by their learning, but by their weight. Kālidāsa being a small lean man, persuaded a fat and unwieldy shepherd to accompany him and personate his *guru*, promising that he would do all the talking, while the shepherd should never utter a word. The ruse succeeded. The shepherd was installed as chief paṇḍit at the Rājā's court, and Kālidāsa as his disciple. One day, however, the shepherd forgot himself and spoke a word in his vulgar idiom in the presence of the king and his court. Kālidāsa, with great presence of mind, composed a verse on the spur of the moment, in which he made an ingenious defence of his *guru's* blunder. This, of course, did not save the shepherd, but made Kālidāsa famous throughout the three worlds. The third legend relates to the manner in which Kālidāsa procured his admission to the court of king Bhoja, by first simulating gross ignorance and afterwards confounding the king's chief paṇḍit by a sudden display of his remarkable power in composing extempore verses in Sanskrit. The fourth legend relates an incident at king Bhoja's court ; how Kālidāsa by means of some ingeniously worded verses outwitted three paṇḍits, who through their great powers of memory had hitherto confounded all claimants to the king's favour. The fifth legend relates how in the early years of his ignorance Kālidāsa conciliated his wife, who was a learned woman and acted to him the part of a Xanthippe, by his miraculously acquired knowledge. The sixth legend tells of a narrow escape of Kālidāsa from the clutches of a man-devouring *pisācha* by his gift of improvising verses. The next two legends relate two other incidents at the court of king Bhoja, which also illustrate the ready power of Kālidāsa of composing Sanskrit verse on the spur of the moment. Then follows a legend, showing how Kālidāsa used to do his marketing in improvised Sanskrit verse. The series concludes with a legend, giving a conversation between Kālidāsa and his wife in extempore verses during a morning walk by the side of a tank covered with lotuses.

A few, hitherto apparently unknown, Sanskrit verses in praise of contentment are added, which are universally attributed to Kālidāsa in that part of the country.

In conclusion, Mr. Grierson promises to communicate at some future time similar legendary accounts of other famous heroes and heroines of Mithilā.

The paper will be published in the Journal, Part I.

2. *Description of a new Lepidopterous Insect belonging to the Genus* *Thaumantis*.—By J. WOOD-MASON.

(Abstract.)

This paper contains additional remarks on the fine butterfly collected by Mr. Ossian Limborg in the Taoo mountains of Tenasserim and described in the 'Proceedings' for July, 1877, p. 163. In the collection made by Mr. Limborg were 225 other species of *Lepidoptera*, from fifty to sixty of which are undescribed.

Both the specimens of the new species, *Thaumantis Louisa*, are males, and each is furnished with a tuft of erectile hairs on the hind wing. It is suggested that these may be odoriferous organs, like similar tufts on the different parts of the body in the males of some Brazilian butterflies.

The paper is accompanied by a plate from a characteristic coloured drawing by Professor Westwood.

The paper will be published in the Journal, Part II.

3. *On the Diurnal Variations of Rainfall-frequency at Calcutta*.—By H. F. BLANFORD, F. G. S., F. Z. S.

(Abstract.)

A table is given of the occurrence of rain at each hour of the day in each month of the year, merely the fact of occurrence and not the amount of rainfall being noted. It is shewn that the proportion of rain falling at different hours of the day varies with the season. In the summer monsoon the smallest rainfall is at midnight, the greatest about 2 p. m., the time of maximum temperature. In the dry and hot season, February to May, the maximum rainfall is between 6 and 8 p. m. owing to the evening storms. In October and November the rainfall appears to have a similar distribution to that prevailing in the rains. In December, the recorded falls are too few in number to lead to any conclusion, but in January, the period of the winter rains, the maximum rainfall appears to coincide with the period of minimum temperature in the early morning.

The paper will be published in the Journal, Part II.

4. *Snow-fall of 1878, in Kashmir.*—By R. LYDEKKER.

(Abstract.)

This was a short paper on the unusual snow-fall of the past winter in the Kashmir Himalayas; the author mentioned that many of the passes were still blocked with snow in the late summer, and also referred to the great destruction of animal life caused by this unusual quantity of snow.

Mr. BLANFORD said that the excessive snow-fall referred to by Mr. Lydekker, seemed to have prevailed throughout the outer Himalayas, and suggested that this might have been the cause of the comparatively low temperature observed in India during the last hot season.

Dr. CAXLEY observed that there was a great variability at the time of the autumn snow-fall; he had crossed the Zogi-la in December, when it was still free from snow, while in other years it was thickly covered at a much earlier period.

The paper will be published in the Journal, Part II.

5. *A New Prākṛit Grammar by Chanda.*—By DR. A. F. RUDOLF HOERNLE.

The Prākṛit Grammar which I have the pleasure to exhibit to the Society to-night, was given to me a few months ago by my friend, Paṇḍit Rām Misra of Banaras. It came originally from some place in the State of Alwar. There is at present, I believe, only one other copy of this work known. It is in the possession of Dr. Rājendralāl Mitra, and is, as I am informed by him, not complete. I have not seen it myself. The copy, in my possession, has every appearance of being a complete one; for it contains rules on all the various forms of Prākṛit (including the Apabhraṃṣa) which are usually treated of in Prākṛit Grammars.

My MS. closes with the usual formula, containing the name of the work and of its author. The name of the latter is simply *Chanda* (चण्ड). That of the former is variously given. At the end of the whole work, and of the first chapter it is simply *lakṣhaṇa*, "characteristic" or "mark"; at the end of the second chapter it is *prākṛita lakṣhaṇa* "Prākṛit characteristics"; at the end of the third chapter it is *prākṛita prakāśa* "elucidation of the Prākṛit"; the latter being the same name, which also Vararuchi's well-known Prākṛit Grammar bears.

The work is perhaps the shortest that I have met with on Prākṛit Grammar. The whole of it is contained on 19 leaves. It is divided into four chapters. The first chapter is on *declension* (*viḥkatividhānam*). It contains 45 rules, and treats of the declension of nouns, pronouns and numerals. Most of the rules throughout the Grammar have a short com-

mentary, and all of them have typical examples added. The second chapter is called *svaravidhānam*. Accordingly it ought to treat of the changes of vowels; but more than half of it consists of rules on other subjects. First there are 14 rules on vowel changes; then follow rules on the interchange of cases, on peculiar Prakrit suffixes and particles, and, finally, even one on the change of the consonant *n* to *ṇ*. Altogether there are 45 rules. The third chapter treats of the changes of consonants, both single and conjunct (*vyañjanavidhānam*). It contains 41 rules. The fourth chapter treats of the secondary Prakrit dialects in the following orders—the Apabhraṃṣa, the Paisācī, the Magadhī or, as it is called in this Grammar, Māgadhikā, lastly, the Śaurasenī. To each of these dialects only one rule is devoted. In conclusion, one more rule is added. It contains a *śloka*, enumerating six languages (*bhāṣās*) as well known ones, *viz.*, Sanskrit, Prakrit, Apabhraṃṣa, Paisācī, Magadhī, Śaurasenī. The whole chapter therefore, consists only of 5 rules.

This Grammar has some very striking peculiarities in which it differs, I believe, from all other Prakrit grammars. One is, that it commences with the rules on declension, while all others begin with those on vowel-changes. Again the rules on the particles, which are here added on to the chapter on vowels, are in the grammar of Hema Chandra and others which follow his arrangement, appended to the chapter on consonants, while in Vararuchi and the grammars of his class they have a separate chapter allotted to them. Again the order of the subordinate Prakrit dialects is here reversed, the Apabhraṃṣa preceding the others, while in the other grammars (Hema Chandra, *e. g.*) it comes last. Barring the Apabhraṃṣa, however, Chaṇḍa follows the order of Vararuchi who has Paisācī, Magadhī, Śaurasenī, not that of Hema Chandra, who takes them in the reversed order, Śaurasenī, Magadhī, Paisācī. Again it is remarkable that Chaṇḍa has no separate rules on conjugation. So far as he adverts to conjugational forms at all, they are explained under the rules treating of changes, vowels and consonants. Again the most curious peculiarity, perhaps, is that the famous rule of the Paisācī dialect, which substitutes hard for soft consonants (*e. g.*, *rācā* for *rājā* king), is given by Chaṇḍa (3, ii) as an ordinary rule of the principal Prakrit dialect (the so-called Mahārāṣṭrī). This fact, by the way, will explain the apparent meagreness of Chaṇḍa's chapter on the subordinate dialects, as compared with other grammars. This meagreness, I do not think can be taken as an indication of incompleteness of the MS. For though only *one* rule is devoted to each dialect, yet that rule relates to the most striking peculiarity of each. The omission of the other rules, therefore, appears to have been original and intentional. There are, besides, a great number of minor peculiarities. It would take too long, however, to mention them here.

As regards the relation of Chaṇḍa to other Prākṛit grammarians, chronologically and otherwise, I have not met with any certain indications. A more thorough investigation may, perhaps, bring to light some. Two rules I have discovered (Chaṇḍa 2, 3, 4) which are almost identical with two rules of Hema Chandra (1, 8, 6); but while in the latter they are in their proper order, they do not appear to be so in the former, (where they ought to be 2, 4, 3). This fact seems to indicate, that Chaṇḍa was acquainted with Hema Chandra's grammar, the rules of which he occasionally made use of in his own way. I have discovered only one rule in Chaṇḍa (*viz.*, 2, 3), the equivalent of which does not exist in Hema Chandra's great grammar. But on the whole, Chaṇḍa's small grammar covers the whole of the ground occupied by Hema Chandra's large work. Some things are expressed more concisely, many more of minor importance are omitted altogether. This will explain the smallness of the size of the work as compared with the extent of the ground occupied by it. On the other hand, there are some points, as *e. g.*, the order of the subordinate dialects, which seem to show that Chaṇḍa was acquainted with and occasionally followed, the school of Vararuchi. Still the peculiarities of Chaṇḍa are sufficiently numerous and striking, to justify us in vindicating for him a place of his own among Prākṛit grammarians.

The reading of the following paper was postponed.

6. *A peculiarity of the River names in Assam, and some of the adjoining countries.*—By S. E. PEAL.

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### LIBRARY.

The following additions have been made to the Library since the Meeting held in August last.

### TRANSACTIONS, PROCEEDINGS AND JOURNALS,

*presented by the respective Societies or Editors.*

Berlin. Königliche Preussische Akademie der Wissenschaften,—Monatsbericht, Mai und Juni, 1878.

Bombay. The Indian Antiquary,—Vol. VII, Parts 83, 84, 85, August, September and October, 1878.

Pt. 84. *J. F. Fleet*.—Sanskrit and old Canarese Inscriptions, Nos. XLIV and XLV. *Rev. G. U. Pope*.—Notes on the Kural of the Tamil Poet Tiruvalluvar. *Sir Walter Elliot*.—The edifice formerly known as the Chinese or Jaina Pagoda at Negapatam.

Pt. 85. *J. F. Fleet*.—Sanskrit and old Canarese Inscriptions, Nos. XLVI and XLVII. *J. Jacobi*.—The Kuṇḍa Inscriptions.

- Boston. Society of Natural History,—Memoirs, Vol. 2, Pt. 4, No. 6.  
 ———. ———. Proceedings, Vol. XIX, Pts. 1 and 2.
- Buenos Aires. Sociedad Científica Argentina,—Anales, Entrega I, Tome VI, Julio, 1878.
- Calcutta. Agricultural and Horticultural Society of India,—Journal, Vol. V, Pt. 4.  
 ———. Geological Survey of India,—Memoirs, Vol. XV, Pt. 1.  
 ———. ———. Records,—Vol. XI, Pt. 3.  
 ———. Ramayana,—Vol. VI, No. 7.  
 ———. Mahábhārata,—Nos. 25, 26, 27.
- Leipzig. Deutsche Morgenländische Gesellschaft,—Zeitschrift, Heft I. und II.  
 Heft II. *H. L. Fleischer*.—Zu Rückerts Grammatik, Poetik und Rhetorik der Perser. *A. Holtzmann*.—Indra nach den Vorstellungen des Mahábhārata. *J. Goldzieher*.—Ueber Muhammedanische Polemik gegen Ahl al-Kitáb.  
 ———. Kunde des Morgenlandes, herausgegeben von der Deutschen Morgenländischen Gesellschaft,—Abhandlungen, Band VI, No. 4.
- Lisbon. Academia Real das Sciencias, classe de Sciencias Moraes, Politicas e Bellas-Lettras,—Historia e Memorias, Tomo IV, Parte 2.  
 ———. ———. Classe de Sciencias Mathematicas, Physicas e Naturaes,—Memorias, Tomo V, Parte 1.  
 ———. ———. Jornal, Tomo V, Dezembro, 1874-76.  
 ———. Academia Real das Sciencias,—Sessão Publica, Dezembro, 1875, Maio, 1877.
- London. The Athenæum,—Nos. 2646 to 2657, July to September, 1878.  
 ———. The Geographical Magazine,—Vol. V, Nos. 6 to 9, June to September, 1878.  
 No. 6. *R. Michell*.—Russian Expedition to the Alai and Pamir. Topographical and Revenue Surveys of India, 1876-77. Retirement of Major-General Thuillier.  
 No. 7. *H. H. Howarth*.—The Country of the White Horde of Kipchak. Marine Surveys of India, 1876-77.  
 No. 8. Cyprus.—Sketches of Persia. Asiatic Turkey. Cartography.  
 No. 9. The Treaty of Berlin. Richthofen on Prejevalsky's Journey in Central Asia. *H. P. Malet*.—Indian Irrigation.  
 ———. Statistical Society,—Journal, Vol. XLI, Part 2, June, 1878.  
*W. Newmarch*.—On the Progress of the Foreign Trade of the United Kingdom since 1856, with Special reference to the effects produced upon it by the Protectionist Tariffs of other countries. *H. Clarke*.—On the Debts of Sovereign and Quasi-Sovereign States, owing by foreign countries.  
 ———. Royal Astronomical Society,—Monthly Notices, Vol. XXXVIII, No. 8, June, 1878.  
 ———. Institution of Civil Engineering,—Proceedings, Vols. LII, LIII, Pts. 2, 3.  
 ———. Nature,—Vol. XVIII, Nos. 454 to 465, July to September, 1878.



London. Royal Geographical Society,—Proceedings, Vol. XXII, Nos. 1 to 6.

No. 3. *Bryce*.—On Armenia and Mount Ararat. *Evans*.—Lecture on the Magnetism of the Earth.

No. 4. *Gill*.—Travels in Western China and on the Eastern Borders of Tibet. *Trotter*.—On the Geographical Results of the Mission to Kashgar, under Sir T. Douglas Forsyth in 1873-74.

No. 6. *Stanley*.—Geographical Sketch of the Nile and Livingstone (Congo) Basins. *T. Dyer*.—Lecture on Plant-Distribution as a Field for Geographical Research.

———. The Royal Society,—Proceedings, Vol. XXVII, Nos. 187, 188.

No. 187. *Rev. S. Haughton*.—Notes on Physical Geology. *W. Marcet*.—Summary of an experimental enquiry into the Function of Respiration at various Altitudes.

No. 188. *Dr. E. L. Moss*.—Observations on Arctic Sea-Water and Ice.

———. Zoological Society,—Proceedings, Pt. 2, August, 1878.

*F. Nicholson*.—A List of the Birds collected by Mr. E. C. Buxton at Darra-Salam, on the Coast of Africa opposite Zanzibar. *A. Anderson*.—On a new species of Indian *Prenia*.

———. ———. Transactions,—Vol. X, Pts. 7 to 9.

———. Geological Society,—Quarterly Journal, Vol. XXXIV, Part 3, No. 135, August, 1878.

*J. G. H. Godfrey*.—On the Geology of Japan. *R. Daintree*.—On certain modes of occurrence of Gold in Australia.

———. The Saturday Review,—Vol. XLVI, Nos. 1187, 1188, July and August, 1878.

Lyon. Société d'Agriculture, Histoire Naturelle et Arts Utiles,—Annales, Tome IX, 1876.

———. Société de Géographie,—Bulletin, Nos. 10, 11, Mai et Juillet, 1878.

No. 10. *C. B.*—De la Colonisation Française en Nouvelle Calédonie.

No. 11. *R. P. Bruker*.—Les Colonies Hollandaises des Indes Orientales.

Moscow. Société Impériale des Naturalistes,—Bulletin, No. 4, 1877.

*H. Sandeberg*.—Esquisse préalable sur son voyage dans les régions de la mer glaciale.

Munich. Die K. B. Akademie der Wissenschaften, Mathematisch-Physikalische Classe,—Abhandlungen, Band XIII, Abtheilung 1.

———. ———. Sitzungsberichte,—Heft III, 1877.

———. ———. Philosophisch-Philologische und Historische Classe,—Sitzungsberichte, Heft I, 1878.

———. ———. Almanach, 1878.

Palermo. Società degli Spettroscopisti Italiani,—Memorie, Dispensa 6, 7, 8, 1878.

No. 7. *P. Tacchini*.—Osservazioni Spettroscopiche solari fatte a Palermo nel secondo trimestre del 1878.

Paris. La Société de Géographie,—Bulletin, Avril, Mai, Juin, 1878.

Mai. *A. Raffray*.—Voyage à la côte nord de la Nouvelle-Guinée. *Dr. J. Montano*.—L'hygiène et les tropiques.

Juin. *C. de Ujfalvy*.—Voyage au Zuarafchâne, au Ferghanah et à Kouldja.

———. La Société d'Anthropologie,—Bulletin, 4me Fasc., Juin à Décembre, 1877, et 1re Fasc., Janvier à Mars, 1878.

1re. Fasc. *Harmant*.—Population de l'Indo-Chine. *Bordier*.—Rapport sur Madagascar.

Pisa. Società Toscana di Scienze Naturali,—Atti, Vol. III, Fasc. 2.

Rome. R. Accademia dei Lincei,—Atti, Vol. II, 1878.

Roorkee. Professional Papers on Indian Engineering,—Vol. VII, No. 29, July, 1878.

Schaffhausen. La Société Entomologique Suisse,—Bulletin, Vol. V, Heft 6, 1878.

Stuttgart. Württembergische Naturwissenschaftliche Jahreshefte,—1874 to 1878.

Trieste. Società Adriatica di Scienze Naturali,—Bollettino, Vol. IV, No. 1, Aprile 1878.

*Dr. C. Marchesetti*.—Di alcune piante usate medicalmente alle Indie Orientali.

Washington. The U. S. Geological and Geographical Survey of the Territories,—Report, 1877.

———. Bulletin, Vol. IV, No. 1.

———. New Zealand Institute,—Transactions and Proceedings, Vol. X, 1877.

Vienna. Die K. K. Geologische Reichsanstalt,—Jahrbuch, Band 28, Januar—Juni,—Verhandlungen, Nos. 1—10, 1878.

———. Die K. K. Central-Anstalt für Meteorologie und Erdmagnetismus,—Jahrbuch, Band 12, Jahrgang 1875.

———. Die Anthropologische Gesellschaft,—Mittheilungen, Band 8, Nos. 1—4.

———. Die K. K. Zoologisch-botanische Gesellschaft,—Verhandlungen, Band 27, 1877.

### BOOKS AND PAMPHLETS, *presented by the Authors.*

ADHARLAL SEN. Kusum Kanan, 2 Vols.

BLANFORD, W. T. Scientific results of the Second Yarkand Mission. *Reptilia and Amphibia, and Geology.*

CUST, R. A sketch of the Modern Languages of the East Indies.

HAYDÉN, F. V. Report of the U. S. Geological Survey of the Territories, Vol. 7.

KAILAS CHANDRA SINHA. Raiamala, or the Annals and Chronicles of Tripura.

NESFIELD, J. C. Catalogue of Sanskrit MSS. existing in Oudh.

# MISCELLANEOUS PRESENTATIONS.

HAWKES, LIEUT. H. P. A brief Sketch of the Gold, Silver and Copper Coinage of Mysore.

E. LINDSTEDT.

JACKSON, W. H. Descriptive Catalogue of Photographs of North American Indians.

F. V. HAYDEN.

MILLER, J. Metaphysics, or the Science of Perfection.

A CITIZEN OF NEW YORK.

Selected Extracts from the Minutes of the Trustees, Indian Museum, from 1st April, 1874, to 31st March, 1877.

TRUSTEES OF THE INDIAN MUSEUM.

A Guide to the Exhibition rooms of the Departments of Natural History and Antiquities.

Catalogue of the *Chiroptera* in the Collection of the British Museum.

TRUSTEES OF THE BRITISH MUSEUM.

Low, C. R. History of the Indian Navy, in 2 Vols.

THE DEPT. OF REVENUE, AGRICULTURE AND COMMERCE.

NEIGHBOR, R. E., REV. A Vocabulary in English and Mikir, with sentences illustrating the use of words. (2 copies.)

HUNTER, W. W. A Statistical Account of Bengal, Vol. XX. Fisheries and Botany of Bengal.

Report of the Land Revenue Administration of the Lower Provinces for 1877-78.

Report of the Financial Results of the Excise Administration in the Lower Provinces for 1877-78.

Report of the Calcutta Court of Small Causes for 1877-78.

Annual Report on Inland Emigration for 1877-78.

Annual Report on Emigration from the Port of Calcutta to British and Foreign Colonies for 1877-78.

Report on the Calcutta Medical Institutions for 1877.

Annual Report on the Insane Asylums in Bengal for 1877.

Report on the Police of the Lower Provinces of the Bengal Presidency for 1877.

GOVERNMENT OF BENGAL.

Annual Medical Report of the Lying-in Hospital for 1877.

Annual Report of the Medical College, Session 1877-78.

Annual Report of the Lunatic Asylum for 1877-78.

MADRAS GOVERNMENT.

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No. 34. *J. Croll*.—On the origin of Nebulæ. *Prof. Hughes*.—On the Physical Action of the Microphone.

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August. *Miss F. Nightingale*.—The People of India. *F. W. Rowsell*.—Malta.

September. *W. R. Greg*.—Foreign Policy of Great Britain. *W. R. S. Ralston*.—Henri Gréville's Sketches of Russian Life. *E. Dicey*.—Nubar Pasha and our Asian Protectorate. *Sir W. Medhurst*.—The Chinese as Colonists.

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No. 7. *A. Bain*.—Education as a Science. *The Editor*.—English thought in the 18th Century.

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*E. W. Blake, Jr.*.—A Method of recording Articulate Vibrations by means of Photography.

No. 92. *A. Gray*.—Forest Geography and Archæology. *J. LeConte*.—Structure and origin of Mountains.

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*M. G. Bousquet*.—La Chine et la Japon à l'Exposition Universelle. *A. Breguet*.—

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*A. Leroy-Beaulieu*.—L'empire des Tsars et les Russes.

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No. 27. *G. Schlumberger*.—Numismatique de l'Orient latin.

No. 28. *F. Kielhorn*.—Kâtyâyana et Patanjali.

No. 31. *Arnold*.—L'Islam selon l'histoire, son caractère et ses rapports avec le Christianisme.

No. 33. *C. Hippeau*.—L'instruction publique en Russie. Catalogue de l'exposition du Ministère de l'instruction publique de Russie.

No. 34. *Col. G. B. Mainwaring*.—Grammaire de la langue Rong.

No. 35. *A. C. Burnell*.—Le Samhitopanishad brahmana du Sama Veda, texte Sanscrit avec commentaire, et le texte Jaiminiya de l'Arsheyabrahmana du Sama Veda. *A. Weber*.—Pancadandachattraprabandha.

No. 36. *D. Hoffmann*.—Essais sur les lois du Pentateuque.

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Juillet. *Général Brialmont*.—Rôle de la fortification improvisée dans la guerre d'Orient de 1877. Les machines à vapeur. *M. Naville*.—La question du sommeil. La Météorologie. *M. G. de Rialle*.—Le Culte Fétichique—les Manes, les Ancêtres et les Esprits.

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PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL,  
FOR DECEMBER, 1878.

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The monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 4th instant, at 9 o'clock P. M.

W. T. BLANFORD, Esq., F. R. S., President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

From R. Gordon, Esq., *La Terre, description des phénomènes de la vie du globe*, par E. Reclus. 2 Vols.

From R. S. Brough, Esq., Instructions for testing Line Batteries &c., and Guide to the technical Arrangement of Telegraph Offices in India. By L. Schwendler, Vol. I, 2nd Edition, and Table of Correction Coefficients for facilitating the computation of the results of Line Tests.

The following gentlemen, duly proposed and seconded at the last Meeting, were balloted for and elected Ordinary Members—

Rajah Luchmun Sing, Deputy Collector, Bullundshahar.

Babu Krishna Ghopal Bakhta.

The following are candidates for ballot at the next Meeting—

R. Sewell, Esq., M. C. S., proposed by Capt. Waterhouse, seconded by C. H. Tawney, Esq.

J. F. Browne, Esq., C. S., M. R. A. S., proposed by H. Rivett-Carnac, Esq., C. S., C. I. E., F. S. A., M. R. A. S., seconded by Captain J. Waterhouse.

Capt. W. E. Gowan, Offg. Garrison Quarter-Master, Fort William, proposed by Capt. J. Waterhouse, seconded by J. Crawford, Esq., C. S.

The SECRETARY announced that Mr. J. Behrendt had intimated his desire to withdraw from the Society.

The SECRETARY reported that up to date, Rs. 1,086 had been subscribed toward the Blochmann Memorial Fund.



The PRESIDENT called attention to the fact that an additional sum of Rs. 400 to Rs. 500 was required in order to procure a bust of the Society's late Philological Secretary.

The PRESIDENT announced that, in accordance with Rules 37 and 38, of the Society's Bye-Laws, the names of the undermentioned gentlemen had been posted up, as Defaulting Members, since the last Monthly General Meeting, and would now be removed from the List of Members, and published in the Proceedings.

|                          |                          |
|--------------------------|--------------------------|
| R. F. Chisholm, Esq.     | R. D. Stewart, Esq.      |
| J. E. Cooke, Esq.        | N. A. Belletty, Esq.     |
| F. W. A. De Fabeck, Esq. | W. G. Bligh, Esq.        |
| R. Forrest, Esq.         | Bábu Gurucharana Dáss.   |
| R. T. Hobart, Esq.       | „ Chandramohana Gosvámí. |
| J. C. Leupolt, Esq.      | „ Niranjan Mukerji.      |
| J. Pickford, Esq.        | „ Yogendranáth Mallika.  |
| G. Shelverton, Esq.      | Maulvi Habiburrahman.    |
| Capt. H. B. Spearman.    | Shashagiri M. Sástri.    |

The SECRETARY reported that duplicate copies of Beal's 'Dharmapada,' Cust's 'Modern languages of the East Indies' and Haug's 'Essays on the Parsis' were available for sale.

Mr. F. R. MALLETT communicated the following correction, received from Mr. Hugh Fraser, regarding the particulars already reported of the fall of the Dandapur meteorite (see 'Proceedings' for November).

"A few days ago I made enquiries on the spot regarding the third fragment of meteorite, said to have fallen at the same time as the two fragments I sent in September. I find that no other fragment fell, and the police in their report evidently mixed up two stories about one fragment which fell on the border of a tank or *jhil*. I can also find no one who says he saw anything like a cloud or smoke, as was reported. The story they told me was that about 5 in the afternoon a loud noise, like "sun sun sun" was heard. Some say it seemed to approach from the north-east; but others say it seemed merely to be straight above. Then there was a loud report like a single clap of thunder, but nothing was visible, and they thought it was some god passing, or a fire-work like a bomb. One fragment fell in a *darzi's* house-yard. The earth was hard there, so it did not make a hole. No one was present at the moment, but when they came up, a *ghari* afterwards, the stone was not hot, and had a whitish flush over it (as far as I can make out) like charcoal when it cools. The other fragment fell in some marshy land, distant 700 paces, as far as I could measure

(there were sugar-cane fields and a tank partly in the way), from the *darzi's* house. Some people who were in their fields not far off searched for it, and found it buried about a cubit deep in the mud. It was not hot when they found it.

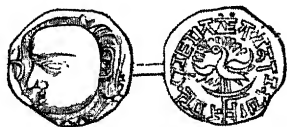
The general account is that the day was still. There was a break in the rains at the time, and except for a few not heavy clouds to the south and west, the sky was bright and clear. It was useless attempting to get any estimate of the duration of time during which the whizzing sound was heard. The crack is said to have been heard for 4 *kos* (about 8 miles) all round. I was afraid this account is somewhat vague and useless, but it is the best that can be got from the natives who were on the spot."

Mr. LYDEKKER exhibited the palate of a large anthropoid ape which had lately been discovered by Mr. Theobald in the Siwálíks of the Punjab; and made the following remarks:

The jaw was that of a female animal, as indicated by the small size of the canine, and indicated an animal intermediate in size between the Orang and the Gorilla. The molar teeth are of the form which is common to man and the living anthropoid apes; the false molars are, however, much narrower than in any of the latter, and are indeed relatively narrower than in man; the small size of the last molar and of the incisor are also characters in which the jaw has a human character. Of the living apes the Chimpanzee makes the nearest approach to the fossil, though the premolars are much wider in that species. The straight line of the molars, the relatively larger canine, and the diastema are quadrumanous characters.

The specimen is of great interest as it is the first of the large anthropoid apes discovered in India; it seems to afford evidence of a connection of Western Africa, the land of the Gorilla and Chimpanzee, on the one hand, and of Sumatra and Borneo the home of the Orang, on the other, with Northern India. The specimen will shortly be described and figured in the "Records" of the Geological Survey.

Dr. RA'JENDRALA'LA MITRA exhibited a new silver coin which he had received for identification from Mr. H. Rivett-Carnac. The coin was in a fair state of preservation, and weighed 34 grains, or a little over half an obolus. Its periphery was irregular, but the inscription on the exergue of the reverse, was complete. The obverse of the coin bore a head of the Sháh type in profile, facing the left; and the reverse, a peacock with out-stretched wings and expanded tail, as common in the peacock coins of Kumára Gupta. The peacock, according



to the Purāṇas, is the vehicle of Kumāra *alias* Kārtika, the god of war ; and the Gupta prince, having the same name, adopted the vehicle of his name-sake for his symbol. No attempt, however, was made to change the character of the head so as to make it in any way accord with the likeness of the person on whose coin it was struck. The likeness is the same on the coins of nineteen different kings of the Shāh dynasty of Guzerat, as also on the mintage of Kumāra Gupta, and on the specimen under notice. Even the horned helmet, first borrowed from the Indo-Bactrians, remains unchanged, though it is not at all likely that Kumāra Gupta ever bore such a head-dress. In so far the type remains the same for, as far as we are at present informed, 22 or 23 reigns ; but the artistic excellence of the design deteriorated markedly in course of time. The earliest Shāh coins are remarkable for the high relief of the head ; the eye so formed as to show the swelling of the eye-ball ; the lips pouting ; and the locks of hair behind the head shown in profusion. In the specimen under notice, the relief is low ; the eye, a full one, formed of two curving lines on a profile face, as was usually the case in Egyptian sculpture ; the lips indicated by two dots ; and the locks attenuated to two or three wavy lines. In front of the head there is a monogram, but it is partially obliterated, and its character cannot be fully made out. In the Shāh coins the monogram contains the date. In the earlier Shāh coins a Greek inscription is also met with, but it does not occur in the specimen under notice.

On the reverse the change is complete ; the whole of the Shāh symbols being replaced by the peacock. The inscription round the peacock is in the Gupta character, and, on the whole, clear and well preserved. Owing, however, to the habit of the Gupta artists sadly neglecting the vowel-marks and the rules of grammar, it is difficult to determine with precision the meaning of the record. The letters as read by Dr. Mitra are :—

श्रीनयसेन दे(?)रजपतरंजं तरमनरणय

The first compound letter is unmistakeable ; it is the well known *S'ri*, the auspicious symbol invariably used before proper names in Indian writings. As far as reading is concerned the next four are clear enough ; the Dr. reads them *Nayasena* or " he who has justice for his army ;" but he could not positively assert whether they are the components of a proper name, or those of an epithet. Coming after *S'ri* they seem to indicate a proper name, while their meaning suggests the idea of an epithet. The key to the solution of the question lies in the next letter ; but it is extremely doubtful. Its counterpart has been met with in some Indo-Sassanian coins, (Thomas' ' Prinsep,' plate XLI), and there it is equivalent to दे (*de*) ; but by reading it दे here no meaning can be extracted from it. The mark for e is a spur on top, as seen very indistinctly on the letter s in *Sena* ; but

here it is indicated by a hook hanging behind. This hook has been repeatedly found to stand for *i*, and it gradually lengthened till it became the modern *ikāra* in Nāgari writing. Dr. Mitra was disposed therefore to take it for an *i*, making the syllable *di*. Assuming then, the inherent vowel of the preceding न to be a long one, he got *ādi* "first," and, linking it with the next two letters, the result is *ādirāja* or "the first king", the founder of the family. The next two letters प and न should in that case be taken for *putra* "son"—"the son of the auspicious first king Nayasena." The omission of the *u* under *p* is not material, but the spur for *r* under the *t* is not common (under the first word *Srī* it is distinctly shown,) but without assuming the omission no sense can be extracted from *pata*. The letters र and ज with dots over them may safely be taken for *rājña*, the genitive singular of *rājan* 'a king.' The name of the son is *Taramana*, which, there is no reason to doubt, is the same with *Toramāna*, the sovereign whose name occurs in the History of Kāshmir and in the Iran boar and the Gwalior inscriptions. The letter *r* of the name is very faint and indistinct. The last four letters call for no remark. The first three, र ए and न, are unmistakable, and the last, (य) though somewhat smudgy, is suggested by the context. The result is *raṇanātha*, "the lord of war." The restored version according to this reading would be:—

*Srī Nayasenādirāja-putra-rājña Toramāna raṇanātha.*

And in English " (The coin) of the king *Toramāna*, the lord of battle, son of the auspicious first king *Nayasena*."

This interpretation, however, is open to a serious objection. In the History of Kāshmir, *Toramāna* is described to be the son of one *Sreshṭhasena* and not *Nayasena*, and, unless the latter be accepted as an *alias* of the former, the interpretation must be wrong. Dr. Mitra was disposed to believe that the two names belonged to the same person; but if this be inadmissible, it would be necessary to take the letter दे to be a remnant of *Deva*, and *pata* to be the remnant of *pati* a 'lord,' the meaning of the whole being thus rendered—

" (The coin) of the auspicious (*Srī*) king *Toramāna*, the divine (*deva*), the master of kings (*rājapati*), the lord of battle (*raṇanātha*), who had justice for his army (*nayasena*). " As the word *Toramāna* cannot be converted into an epithet, the words *Nayasena Deva* cannot be taken to be the name of the king. Thus whatever interpretation is accepted the coin must be attributed to *Toramāna*, and a strong proof of this is afforded by the coin described by Mr. Thomas in his edition of Prinsep's Essays (II, p. 339) as an "unpublished and unique" specimen, which, in weight, character and devices, closely corresponds with the specimen now under notice. The only difference between the two lies in the inscription; but as Mr. Thomas' specimen was very imperfect, and nothing beyond the name could be satisfac-

torily read on it, it is of no importance; not to advert to the fact of it having been formerly a common practice with kings to change the legends and inscriptions of their coins.

Dr. RĀJENDRALĀLA MITRA next exhibited some Hindi MSS. which he has lately obtained from Bābu Brajanāth Bandyopādhyāya of Jaypur.

The first work he noticed was named *Sarfarāj-chandrikā*. It is a *puṭhī* of 92 folia, each 8 × 5 inches. It opens with a brief notice of Sarfarāj, the hero, who is said to have been the 10th in descent from Saṅkara Achārya, the great Vedantist. It is stated that Saṅkara had four sons: 1st, Toṭaka Achārya, 2nd, Padma Achārya, 3rd, Udyama Achārya, 4th, Bālagovinda; and the sons of these formed the ten founders of the Daśanāmi sect. One of them was, (3) Omkāra, and his descendants were successively, (4) Purushottama, (5) Chandaka Giri, (6) Nārāyaṇa Giri, (7) Dhyāna Giri, (8) Rajendra Giri, (9) Umrao Giri, (10) Sarfarāj. It was for the instruction of the last that the work was composed by Devakinandana Kavi, son of one Bhavasāgara, a Kanauji Brāhman. Judging from its style the work cannot be older than the 14th century. Its subject is mystic poetry, describing the amours of Kṛishṇa and Rādhā. The codex is dated Samvat 1843, and is 90 years old.

The second work shown was a genealogical table of the Rājās of Jaypur. Its first folium was wanting, and therefore it was not possible to ascertain the name of the founder; but there were altogether 238 names, and, if the list be reliable, the founder must have lived in a remote period of antiquity. The later names have dates attached to them, and a short chronicle of the later kings is appended. The last folium is wanting, and nothing can be said of the authenticity of the work.

The third work has three names. On its cover it is called *Kewat Rāsā*; in the introduction, *Anantarāya Sākhilāki Vāratā*, and in the colophon, *Anantarāya Sākhilāki vāt*. The word *rāsā* appears to be a generic term for biography. It is used both for poetical and prose compositions, and occurs under different forms. In the oldest MS. of Chand the form most common is *Rāyasā*, but in some later MSS. of that work *Rāsā* is sometimes met with. The better order of people at Benāres invariably use the former; but in the Marhāṭṭā country the latter is preferred, the common term there for this class of composition being *Bākhars*. *Rāsā* also prevails in Rājputānā, where its synonyms are *Vilāsa*, *Charitra*, and *Prakāśa*. The work under notice was originally written in the ballad style by a family bard, or Bhaṭṭa, of the hero, in Samvat 1347, but it was recast and a great deal of prose introduced into the text in the Samvat year 1854 by a scribe. The hero is Anantarāya, a petty prince of Kolāpur Pāṭan. He lived in the second half of the 14th century, and his struggles against Muhammadan ascendancy form the subject of the work.

The fourth was entitled *Hamír Rásá*. It is a small work of 54 folia 4to, written in the ballad style of Chand's *Prithviráj Ráyasá*, the language being old Hindi, but not quite so archaic as that of Chand's. The hero of the ballad is *Hamír*, the renowned sovereign of Ranthambor, whose name has served as a title of honor to many an Indian chief since his time. He lived in the time of 'Aláuddín, against whom he waged a devastating war for many years. The author of the work is *Maheśa* who was the family bard or *Bhaṭṭa* of the hero. The MS. is dated Samvat 1861, and is seventy-four years old. Dr. Mitra also submitted an English translation of the work by *Bábu Brajanáth Bandyopádhya*, and suggested that, after revision, it be printed in the Journal.

The following papers were read—

1. *A peculiarity of the River Names in Assam and some of the adjoining countries.*—By S. E. PEAL, Esq.

This paper will be published in the Journal, Part I.

2. *Physiographical Notes on Tanjore.*—By LIEUT.-COL. B. R. BRANFILL, Deputy Superintendent, Survey of India. Communicated by COL. J. T. WALKER, C. B., R. E., Surveyor General of India.

This paper will be published in the Journal, Part II.

3. *On the proper relation of the Sectional Areas for Copper and Iron Lightning Rods.*—By R. S. BROUGH, Esq.

(Abstract.)

In this paper the author shows that the usually accepted statement that an iron lightning rod should have 4 times the sectional area of a copper rod is erroneous and that the proper proportion is 8 to 3.

The paper will be published in the Journal, Part II.

4. *On Arvicola Indica, Gray, and its relations to the sub-genus, Nesokia, Gray.*—By DR. J. ANDERSON.

This paper will be published in the Journal, Part II.

Mr. W. T. BLANFORD said that he had a few years ago, paid some attention to the genus *Nesokia*, but at that time he had not sufficient materials for a complete understanding of the species. Indian Zoologists were indebted to Dr. Anderson for working out a very difficult subject.

Although Mr. Blanford was not quite convinced of the identity of *Arvicola indica* with *Nesokia hardwickei*, he quite agreed with Dr. Anderson that the specific name *indica* should be abandoned. The original figure of *Arvicola indica* in the "Illustrations of Indian Zoology" was probably taken from a bad native drawing of an ill-stuffed specimen. The name

*N. indica* had been for so long generally applied to the other common Indian species that to transfer the specific term would cause great confusion, and should be avoided if possible. It must be understood, however, that if it be once conceded that the plate in Gray and Hardwicke's 'Illustrations' was undoubtedly intended to represent *N. hardwickei*, there was no choice in the matter, the rules of nomenclature must be followed and the species must stand henceforth as *N. indica*. It was no more practicable to substitute the later name *N. hardwickei*, than to apply the still more recent term of *Spalacomys indicus*. He considered that in the absence of any type, there was a sufficient uncertainty as to what rat was represented by *Arvicola indica* to justify the disuse of the specific name.

The speaker added that he had dug up some of the burrows of *Nesokia hardwickei* and traced them over a large space of ground. One especially in Sind he had traced for between 40 and 50 yards and finally captured the inmates, an adult male and female, and two fully grown but younger animals, also a pair. The burrow was sometimes close to the surface, but in places as much as two feet beneath the ground, and contained a chamber lined with fragments of grass, but no store of grain.

5. *On the Indian Species of the genus Erinaceus.*—By DR. J. ANDERSON.

This paper will be published in the Journal, Part II.

6. *Description of a supposed New Hedgehog from Muscat in Arabia.*—By W. T. BLANFORD, F. R. S., &c.

(Abstract.)

Amongst a collection of small mammals, birds and reptiles sent to the writer by Col. Miles, the Political Agent at Muscat, were two specimens, one preserved in spirit, the other a dried skin, of an apparently undescribed *Erinaceus*, somewhat intermediate in characters between the Indian *E. collaris* and the Persian and Baluchistan *E. macracanthus* and *E. megalotis*, being larger than the former and having longer spines, whilst it is inferior in both respects to the two latter. The following is a brief description—

*ERINACEUS NIGER*, *sp. nov.*

Black above; the spines from an inch to an inch and a quarter long on the hinder part of the back, black at the points for half an inch, then surrounded by a narrow white ring, then dusky to near the base. All the lower parts blackish brown. Ears long, rounded at the end, thinly clad outside and near the margin inside with short whitish hairs. Head sooty black with a few grey hairs intermixed. Feet of moderate size, each with five claws, the inner claw on each hind foot much smaller than the others. Length of a female specimen in spirit (and doubtless somewhat contracted)

from nose to anus 5·5, of tail 0·9, of ear from orifice 1·6, breadth of ear 0·9, length of palma 0·9, of planta 1·25 inches. The skull is 1·9 inches long and 0·98 broad across the zygomatic arches.

This paper will be published in the Journal, Part II.

7. *Description of a New Homopterous Insect, belonging to the genus Cosmoscarta.*—By W. L. DISTANT. Communicated by J. WOOD-MASON.  
(Abstract.)

The insect described and named *Cosmoscarta masoni* was found at Tao, in Tenasserim by Mr. Limborg.

The paper will be published in the Journal, Part II.

## LIBRARY.

The following additions have been made to the Library since the Meeting held in November last.

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*presented by the respective Societies or Editors.*

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Bombay. The Indian Antiquary,—Vol. VII, Part 86, November, 1878.

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*A. Decker*.—Reise nach Krasnowodsk und Daghestan.

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*Col. de Coatpont*.—Analyse d'une carte représentant l'Asie et l'Europe en projection azimutale équivalente.

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Vol. VI. *C. W. Brooks*.—Report of Japanese Vessels wrecked in the North Pacific Ocean, from the earliest records to the present time.

Singapore. Royal Asiatic Society,—Journal, No. 1, July, 1878.

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Washington. The United States Geological and Geographical Survey of the Territories,—Bulletin, Vol. IV, No. 2, 1878.

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*E. Satow*.—The Korean Potters in Satsuma.

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- No. 18. *P. Bert*.—Sur l'état dans lequel se trouve l'acide carbonique du sang et des tissus. *M. Delafontaine*.—Sur le *Décipium*, métal nouveau de la Samarskite. *M. Perrodon*.—Sur un téléphone avertisseur.
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- No. 15. L'Afghanistan, d'après deux rapports de l'état-major Russe.



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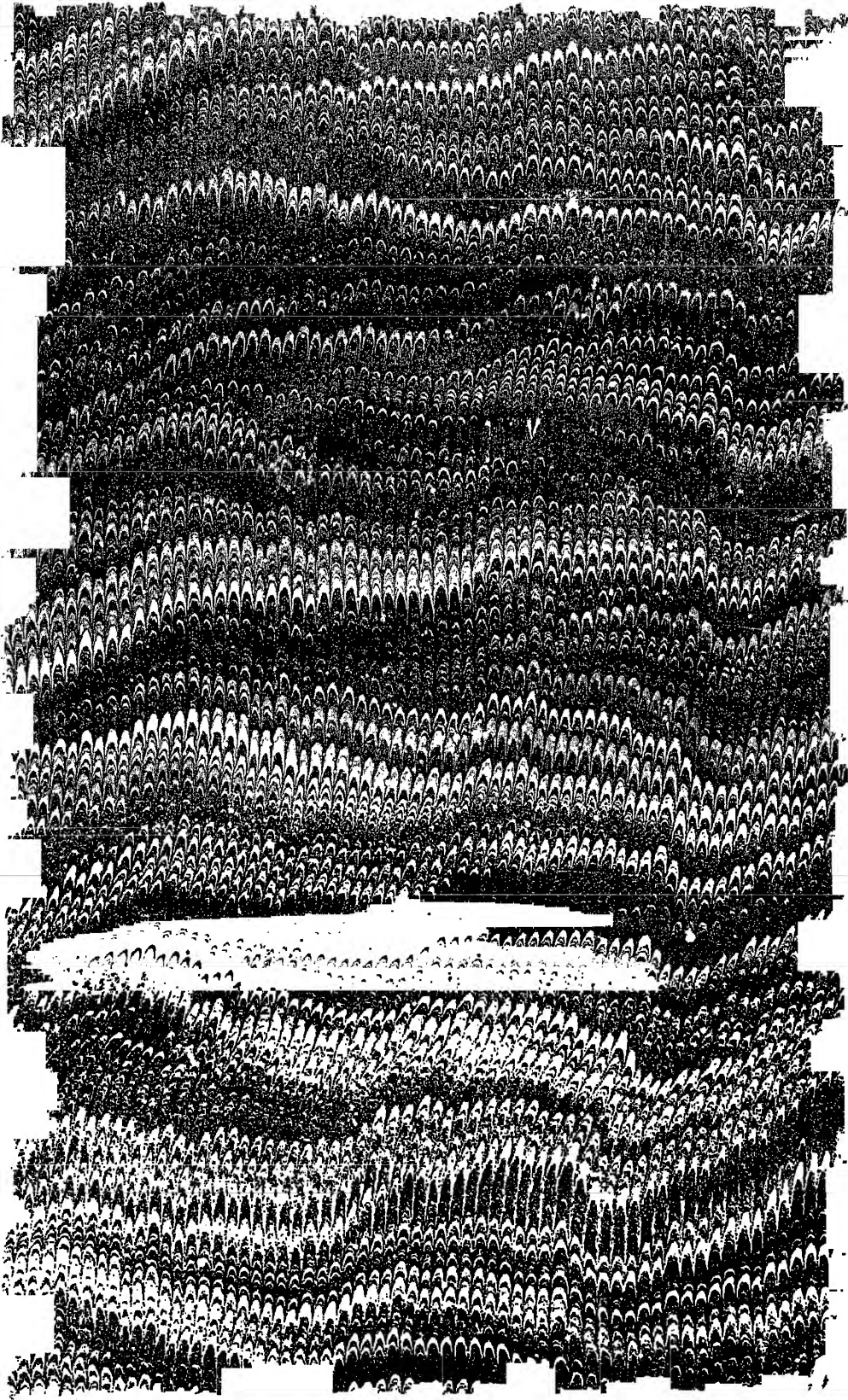
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